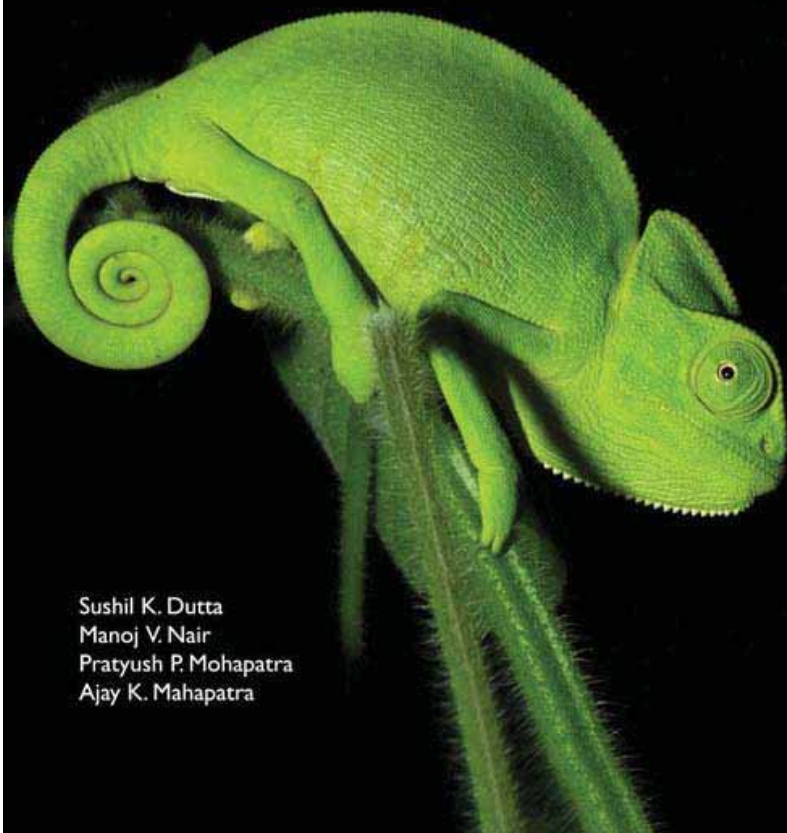


Amphibians and Reptiles of Similipal Biosphere Reserve



Sushil K. Dutta
Manoj V. Nair
Pratyush P. Mohapatra
Ajay K. Mahapatra



REGIONAL PLANT RESOURCE CENTRE
Nayapalli, Bhubaneswar



Amphibians and Reptiles of Similipal Biosphere Reserve



S. K. Dutta
M. V. Nair
P. P. Mohapatra
A. K. Mahapatra



REGIONAL PLANT RESOURCE CENTRE
Bhubaneswar

ISBN 81-900920-7-3

Published by
Regional Plant Resource Centre
Nayapalli, Bhubaneswar 751 015, Orissa, India
Website: www.rprcbbsr.com; Email: rprcbbsr@gmail.com

First published: 2009

Copyright © 2009 in text: S.K. Dutta, M.V. Nair, P.P. Mohapatra and A. K. Mahapatra
Copyright © 2009 in photographs: Individual credited
Copyright © 2009 Regional Plant Resource Centre

All rights reserved. No part of this publication may be reproduced, stored in any retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior permission of the copyright owners.

Use in educational purpose may be cited as:
Dutta, S.K., M.V. Nair, P.P. Mohapatra and A.K. Mahapatra. (2009). Amphibians and reptiles of Similipal Biosphere Reserve. Regional Plant Resource Centre, Bhubaneswar, Orissa, India.

Cover photographs: Indian Chameleon (PPM), Bamboo Pitviper (PPM), Painted Balloon frog (MVN)

Typeset & Printed at
Third Eye Communications
N-4/252, IRC Village, Bhubaneswar

FOREWORD

Amphibians and reptiles rarely get the kind of attention showered by wildlife enthusiasts on mammals, birds and even some groups of insects such as the butterflies. Part of the reason is the paucity of ready reference field guides to what is called our herpetofauna.

Over the past 4 decades that I've been engaged in herpetology in India there has been a quantum leap in interest and engagement with the subject; it was a very lonely field of study in the 1960s, the main peer groups being snake-charmers and tribal snake catchers! Since that time there have been numerous snake parks established around the country, several academic institutions have courses in herpetology, there has been a proliferation of snake 'rescue centers' and of course the major nature channels on television feature reptiles virtually every day.

Rural India is still very much in the grip of old beliefs about reptiles, some quaint and ridiculous and some extremely damaging to the continued existence of many species. Though the reptile skin industry has more or less been contained, several taxa such as monitor lizards and turtles are still sought for food, and a number of these are now rated as Endangered or even Critically Endangered in the IUCN Red Data listing. But perhaps the most serious threat to amphibians and reptiles is habitat loss, notably the conversion of forests and wetlands into agriculture and wasteland by human activities.

Fortunately Orissa is one state where the forest cover has not been totally denuded and boasts large tracts of Reserved Forest as well as Protected Areas. One of these is the Simlipal Biosphere, covering an area of 5569 square kilometers and encompassing a mosaic of dense forest, hills, escarpments, rivers and grasslands, interspersed with villages and croplands. According to the authors of this book Simlipal's diversity of habitat is home to 81 of the 155 species of amphibians and reptiles found in Orissa, a refuge

of critical importance to the biodiversity of the region, under the guardianship of the Orissa Forest Department.

But it takes more than government machinery to keep a protected area viable; a good deal of the success of our Protected Areas is due to interest from the public in the spell-binding vistas and creatures found therein. Humans have an insatiable desire to identify and name things, perhaps this is the very basis for the evolution of language. Learning to recognize the birds and butterflies in the garden, the geckos on the wall of the house and lizards on the trees is a child's first foray into 'wildlife research' and as he or she gets older the thirst for knowing the names of creatures gets stronger.

It is a pleasure, therefore, to see this new, well illustrated volume on the amphibians and reptiles of Simlipal, a collaborative effort by four well known herpetologists of Orissa. It is a field guide, pure and simple, just the kind of book for both the beginning as well as the seasoned naturalist. While it not a problem to find a good book to identify all the birds of Simlipal, it is only now possible to find a single book covering all the species of frogs, toads, lizards, snakes, turtles, tortoises and crocodiles of this Tiger Reserve. This is an extremely important achievement and will no doubt encourage more people, young and old, to become interested in the amazing herpetofauna of our country.

Romulus Whitaker

'Pambukudivanam'

Chengalpattu, Tamil Nadu

November, 2009

ACKNOWLEDGEMENTS

We thank the Ministry of Environment and Forest, Government of India for providing financial support to Regional Plant Research Centre (RPRC), Bhubaneswar, Orissa under Lead Coordination Centre Programme to publish the book.

Our heartfelt thanks to Mr. R. N. Reddy IFS, Regional CCF; Mr. H. S. Upadhyaya IFS, Field Director, Similipal Tiger Reserve and other staff members of the Park for their support. The encouragement provided by Dr S. K. Kar and the research staff of the office of Chief Wildlife Warden was instrumental in coming up with such kind of publication.

We wish thank to the staff of Regional Museum of Natural History, Bhubaneswar, specifically Dr P. Ray (former Scientist in Charge), Mr. G. N. Indresh (Scientist in Charge) and Dr Siba Prasad Parida for their help.

Herpetologists like Romulus Whitaker, Indraneil Das, Frank Tillack, Gernot Vogel, Patrick David, Kaushik Deuti, B.H.C.K. Murthy, Saibal Sengupta provided much valued inspiration and encouragement in our endeavour. Thanks to Vasundhara, Bhubaneswar for their support in various field trips in Orissa.

We also thank the staff of Species Division, WWF-India, New Delhi, especially Mr. Ravi Singh and Dr Diwakar Sharma for their support and encouragement in various ways.

Our gratitude to Dr (Mrs.) Pravati Kumari Mahapatra, Md. Firoz Ahmed, Abhijit (FCN), Dr H. K. Sahu, Dr S. D. Rout, Varad Giri, Smita Ranjanee, Niladri, Deepak, Sujogya, Prasad, Biswanath (T2), Satyanarayan, Nikita, Pari and all our friends for their help in field trips and inputs.

Our heartiest thanks to Dr Santosh Kumar Mahapatra, Mr. Biswajit Mohanty and Cuckoo Mahapatra for going through the manuscript to weed out mistakes.

We thank our family members for tolerating our long and unpardonable absence from homes during field tour.

Last but not the least thanks to Mr. Jyoti Ranjan Swain, Mr. Sudhakar Mishra & Ananta Ojha of Third Eye Communications for their help in designing and type setting of the book.

Authors

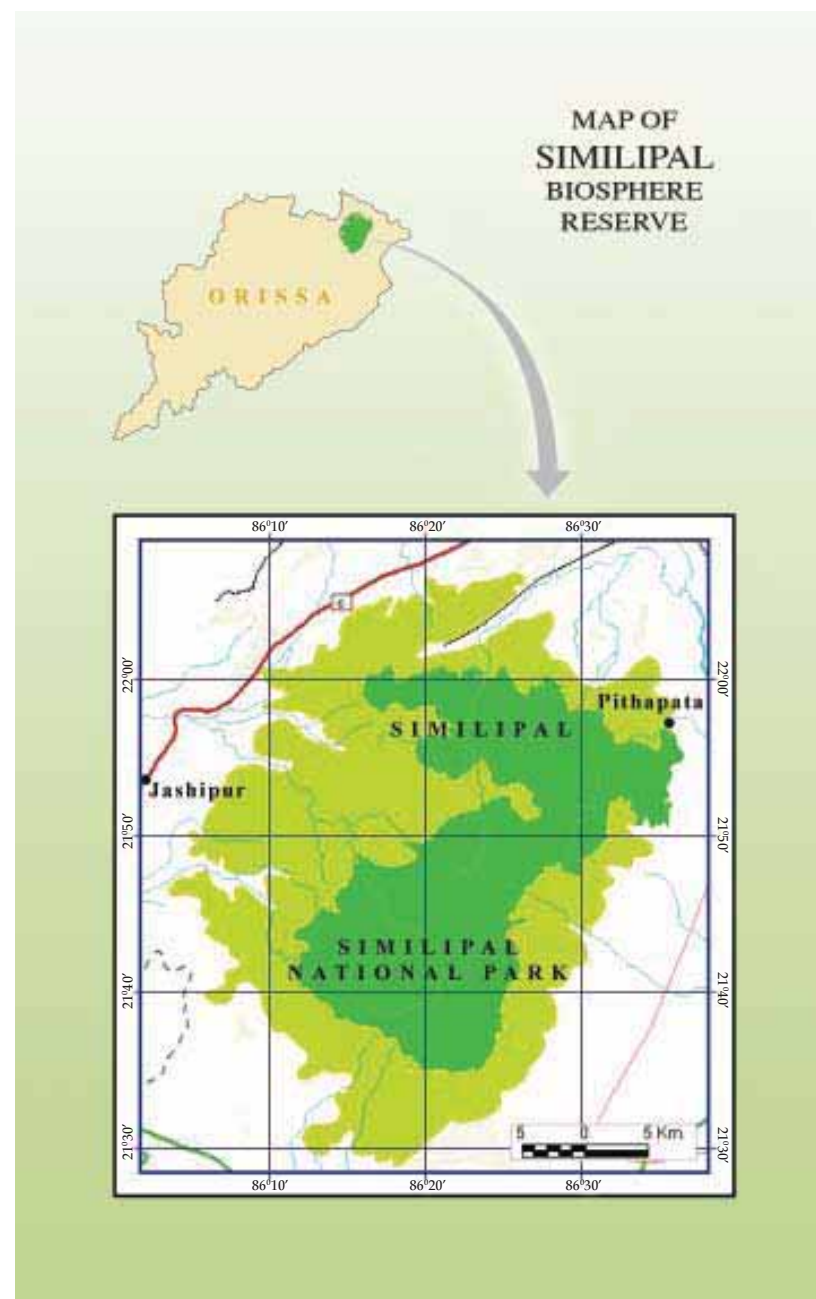


Joranda fall, Similipal

M. V. S. S.

CONTENTS

About the book	
Introduction	1
Amphibians and Reptiles of Similipal	4
More facts about snakes	7
Snakebite	9
Keep your house free from snakes	11
First aid for Snakebite	12
Snakebite treatment	14
Checklist of Herpetofauna of Similipal	17
Species Account	
Frogs	20
Turtles	54
Crocodile	62
Lizards	64
Snakes	98
Glossary	164
Suggested Reading	167
Species Index	168
About the authors	171



ABOUT THE BOOK

This book is the first ever field guide in Orissa covering 81 species of amphibians and reptiles found in Similipal Biosphere Reserve. The book contains 160 colour photographs of all the species of herpetofauna found in the Reserve. The descriptions given in the book are for easy identification of species by readers. The species description begins with a header containing the common English name followed by scientific name. The vernacular name, if available, is given below the scientific name. The maximum size of the animals are given. In the book the potentially dangerous snakes are indicated by a red marking on the upper left corner of the page. At the beginning of the book the annotated checklist of the herpetofauna of Similipal is given with their legal status under Wildlife (Protection) Act, 1972. There is an useful section on snakebite covering updated first aid, treatment and snake management. The suggested reading section covers other relevant source of information regarding natural history, ecology, systematics and conservation of herpetofauna. A glossary of technical terms, which has been used in the text, is given. An index of common English names and scientific names are provided for quick access to the species described in the book.

The book can be used by field biologists, visitors, researchers, doctors and general public as a source of information on the little known animals.

Some of the technical terms described in this book regarding the amphibian and reptile body parts are depicted in the following plates.

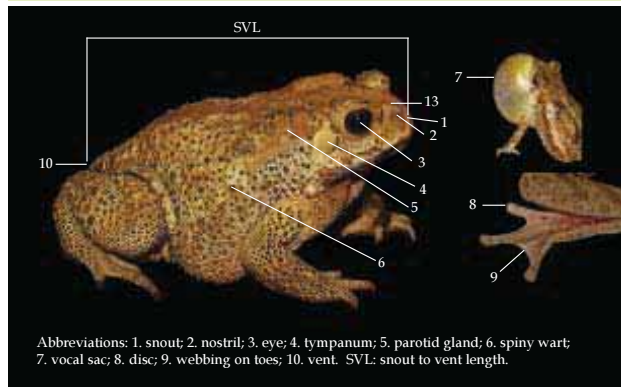


Plate 1. Different body parts of amphibia

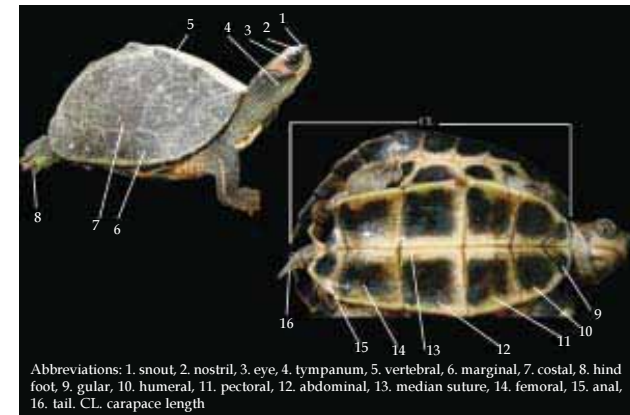


Plate 2. Different body parts of turtle

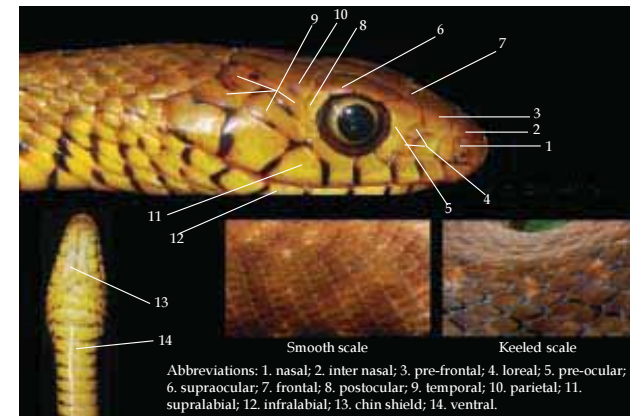


Plate 3. Different body scales of snake

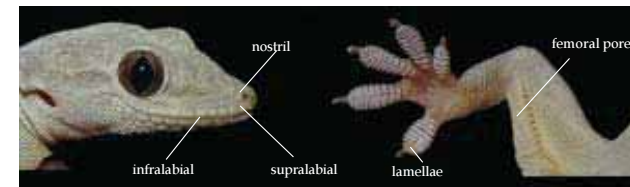


Plate 4. Some of the key characters of gecko

INTRODUCTION

Orissa is treasured with a diversified topography and bestowed with an array of vegetation types, thus providing suitable habitats to a variety of interesting herpetofauna. For example, it is the only state in India where all the three species of crocodilians are found in nature. In addition, the longest poisonous snake (King cobra), the largest Indian snake (Rock Python), the largest Indian lizard (Water monitor) and the limbless lizards are found in the state. The herpetofauna of Orissa is represented by more than 155 species (26 species of frogs and toads, 3 species of crocodilians, 16 species of turtles, 30 species of lizards and 80 species of snakes).

If someone looks at the satellite imagery of the district of Mayurbhanj, one cannot but be overawed by the oval patch of dark green, occupying almost its entire central area- the verdant forests of the Similipal hills. It is a vast and varied landscape with the Tiger Reserve bordering the protected areas of Hadgarh and Kuldiha to the south and the forests of Keonjhar to the west. One among the 18 protected areas of the State, Similipal is situated in the Mayurbhanj district of Orissa. Biogeographically it is a part of Chhotanagpur Plateau, bordering the districts of Balasore and Keonjhar at the east and southwest respectively, and the states of West Bengal and Jharkhand at the northeast and north- west respectively (Latitude: 20° 17'- 22° 34' N, longitude: 85° 40'- 87° 10'E). The Tiger Reserve includes about 2750 sq.km, with a core area of 1194.75 sq. km and the total area under the Biosphere Reserve is 5569 sq. km. with Similipal Sanctuary at its nucleus. The highest points are the twin peaks of Khairiburu and Meghasani, the latter affording a grand stand south facing view of seemingly endless forests all around. The undulating and deeply folded plateau at places is dissected by narrow gorges, giving rise to some spectacular cascades overlooked by precipitous cliffs. Each of the numerous folds of

2

the hills gives rise to its own stream, garlanding the landscape with a glistening network of life giving rivulets. Majority of these streams are perennial and join to give rise to ten large rivers, namely Balanga, Ganahar, Sono, East Deo, Sanjo and Palpala towards the east; Khairi and Bhandan towards the north; West Deo to the north west and Salandi to the south west. The perennial nature is partly because of high and well-spread out rainfall (an average of 2200mm of rain in about 135 days) and also due to the high water retention capacity of these hills. In fact, its geological layout of having three huge concentric cups of impervious quartzite rocks with their interspaces filled with pervious volcanic rocks is an unique feature in itself.

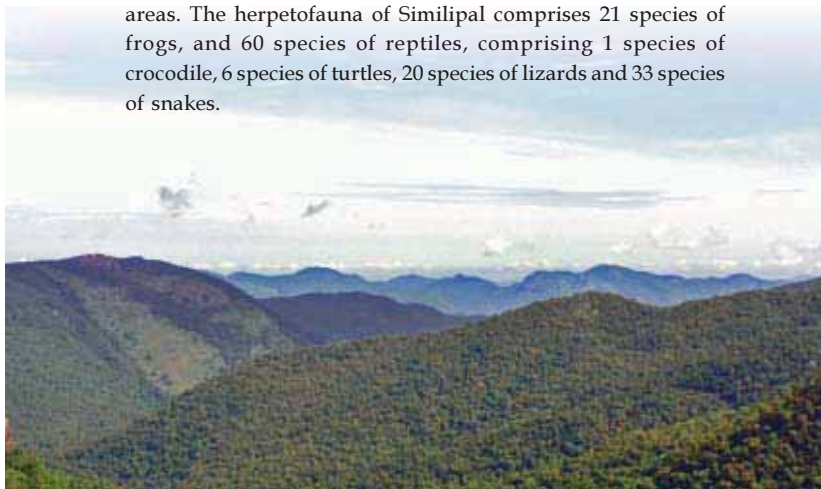
The hills, with their numerous peaks and valleys, rise steeply from plains of Udala in the south and Baripada in the southeast and extend up to Jashipur in the northwest, Bisoi in the north and Thakurmunda to the west. The riparian zones, perennial streams and meadows form the key areas. The Bhadracharya valley, Tarinivilla area, Patbil and numerous small swamps and marshes form the riparian zone. The prominent meadows are Devasthali, Bachhurichara, Sapaghar, Matughar, Tarinivilla, Tiktali, Chahala and upper Barhakamuda. Perennial streams like the Budhabalanga, Palpala, East Deo, Nekedanacha (Salandi), West Deo, Khairi, Bhandan, Khadkei and many more drain in to the Bay of Bengal.

As fascinating as the biodiversity, the human and cultural landscape of Similipal is predominantly tribal in nature. Among the main tribes are Kolha, Santhala, Bhumija, Bhatudi, Gondas, Khadia, Mankadia and Saara. By and large all are settled agriculturists, supplementing their income by firewood and timber collection, barring the last three who are autochthonal hunter-gatherer communities living primarily off the forest by collecting forest produce. The Khadias in particular consider Similipal as their primordial home. Each of these communities has its own set of beliefs, traditions and rich folklore, often intimately linked to the forest and its natural rhythms. To an outsider, they may look primitive and poor, but they seem to

have a care free approach to life sans the worries of city life, perhaps living in the moment with no care for the future or any regret about the past. Dancing, singing and merry making is almost an everyday occurrence during festivals, the major being Raja Parva. Of late, however, the traditional way of life has been altered substantially due to the influence of modern civilization. Traditional conservation practices including closed seasons, hunting taboos on specific species, maintenance of sacred groves (*Jharia*) etc. are on the decline. Of the 65 villages scattered within the tiger reserve area, four are in the core areas. Most of the valleys have been taken up for paddy cultivation, where two crops are raised every year as water is abundant. Thus, the landscape, particularly in the northern portion has been substantially modified by man and his activities.

Faunal Composition

Similipal is a veritable repository of biodiversity, unsurpassed by any forest in the peninsular India, leaving aside the Western Ghats. It is home to 1076 species of plants, 55 species of mammals, 304 species of birds, 60 species of reptiles, 21 species of amphibians, 38 species of fishes and 164 species of butterflies. Another significant feature is that these forests represent a link between the foot hill of Himalayas and the Eastern Ghats, as indicated by presence of biodiversity belonging to both these areas. The herpetofauna of Similipal comprises 21 species of frogs, and 60 species of reptiles, comprising 1 species of crocodile, 6 species of turtles, 20 species of lizards and 33 species of snakes.



Amphibians and reptiles of Similipal: A brief portrayal

Frogs

The frog fauna of Similipal is represented by 5 families. The family Bufonidae (Toads) is recognized by warty skin and the presence of a pair of poison gland behind the head known as “parotid gland”. This family is represented by three species in Similipal and the genus *Duttaphrynus* has recently been named after Prof. S. K. Dutta (the first author of this book), which includes the Common Asian toad *Duttaphrynus melanostictus*. The family Dicroglossidae (True Frogs) comprises Bull frogs and Cricket frogs in Asia and is represented by eight species under four genera in Similipal. The family Microhylidae (Narrow mouthed frogs) is characterized by small sized body and narrow head and is represented by five species belonging to four genera. The family Ranidae includes a single species, the Fungoid frog. The family Rhacophoridae (Tree frogs) includes arboreal frogs of small to large body size, smooth skin and having sticky digital pads (discs) under toes and is represented by four species under three genera.

Crocodile

Crocodiles are ancient group of reptiles, with typical reptilian pattern body, short limbs and a massive long tail. The skin of the body is armoured with bony plates and the tail is with serrated scales. The only species, Marsh crocodile, is found in Similipal.

Turtles and Tortoises

Six species of turtles are found in Similipal, of which there are four species of hard-shell fresh water turtles (Family: Bataguridae), one species of land tortoise (Family: Testudinidae) and one species of soft-shelled fresh water turtle (Family: Trionychidae).

Lizards

Lizards of Similipal include Garden lizards, Chamaeleon, Geckos, Fat-tailed gecko, Snake lizard, Skinks and Monitor lizards. The Agamids (Family: Agamidae) are old world lizards, characterized by the nature of their teeth. Many species have undergone adaptive radiation; most of them are arboreal, some fossorial and some are terrestrial. This family is represented by three species under three genera in Similipal. Chamaeleons (Family: Chamaeleonidae) are arboreal animals, with characteristic sticky tongue, movable eye, prehensile tail and syndactyle foot, which separate them from other members of Lizards. Only one species of chameleon is found in India, which is common in Similipal. The Fat-tailed gecko (Family: Eublepharidae) is characterized by the presence of moveable eyelid. Out of three species found in India, one species is observed in Similipal. The Geckos (Family: Gekkonidae) are a distinctive group of lizards, characterized by soft skin covered with granules; no symmetrical shields on the head and the autotomic (detachable) tail. They are represented by 6 species of 2 genera in Similipal. The snake lizard (Family: Lacertidae) is the group of lizards distinguished by presence of well developed limbs, notched tongue and difference in size of scales between dorsal and ventral sides of the body. Out of two species found in Orissa, one is found in Similipal. The skinks (Family: Scincidae) are typically represented by elongated body, enlarged head scales, little or no neck, scales on the body smooth or keeled; shiny and arranged in imbricate fashion and limbs well developed, vestigial or absent. Seven species under four genera are found in Similipal. Monitor lizards (Family: Varanidae) are one among the largest living lizards, characterized by long neck, long bifurcated tongue and massive body. Out of three species found in Orissa two species occur in Similipal.

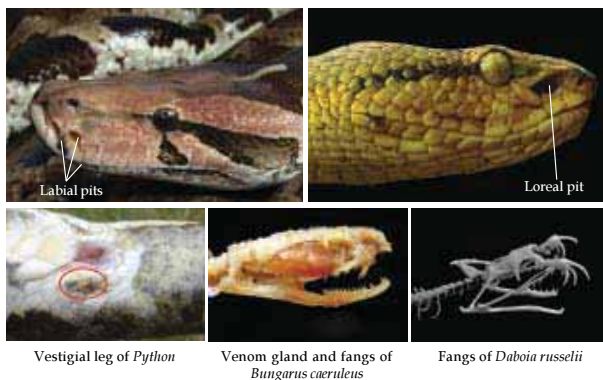
Snakes

The snake fauna of Similipal comprises members of family Boidae, Colubridae, Elapidae, Viperidae and Typhlopidae. Boas and Pythons (Family: Boidae) are the primitive snakes. Typical characters of these snakes are rudimentary pelvic girdle and hind limbs in the form of claw like spurs on both sides of the cloaca, asymmetrical scales on the head, labial pits and small ventral scales. There are 2 species of Boas and one species of Python found in Similipal. Colubrids (Family: Colubridae) are composed of 320 genera and 1600-1850 species in the World. The most important character that separates this group from the dangerously venomous snakes is the location and presence or absence of the furrowed teeth (aglyphous and opisthoglyphous). Majority of the snake species under this family are harmless to human, except for some rear fanged (opisthoglyphous) snakes. Nineteen species under fifteen genera are found in Similipal. Elapids (Family: Elapidae) are the potentially dangerous snakes, which include cobras, kraits and coral snakes. The fang is short and immobile (fixed). The venom is neurotoxic and causes respiratory failure. All the elapids are oviparous. There are five species under three genera found in Similipal. Typhlops or Blind snakes (Family: Typhlopidae) are all fossorial, living either underground or in the leaf litter. They are commonly known as "Blind snake" because of their tiny eyes, which are not so prominent. There are two species of Typhlops under two genera found in Similipal. Vipers (Family: Viperidae) are potentially dangerous snakes and their venom is mainly haemotoxic (acts through the vascular system). They possess enlarged poison fangs, which can be folded posteriorly and is hollow in nature. Vipers are of two types i.e., pit vipers and pitless vipers. The pit vipers possess sensory pits laterally on the snout at the loreal region and this pit acts as a thermal detector for locating warm-bodied prey. They are either oviparous or ovo-viviparous. Three species under three genera are found in Similipal.

More facts about Snakes

Snakes are dreaded as dangerous creatures but in fact, most species of snakes are harmless to human. Very few of them possess potential venom to kill human being. Many people are afraid of snakes and the fear of snakes have been due to deep-rooted prejudice, lack of awareness and to some extent on account of myths spread by people whose livelihood is dependent on snakes.

A snake is characterised as a great elongation of the body, accompanied by complete absence of anterior limbs, great reduction or complete absence of hind limbs, associated elongation of internal organs with reduction or loss of one of the lungs, a peculiarly efficient mode of locomotion by wriggling with extreme flexibility of vertebral column aided by distinctive character of transverse plates. The most fundamental characters are their great flexibility of the jaw apparatus, absence of shoulder girdles (may be associated with the food getting habits), pattern of head shields, absence of external ear openings and eyes represented by a fixed transparent eyelid. The snakes have adapted to various habitat (arboreal, fossorial, aquatic, semi-aquatic, terrestrial and



marine). The snakes basically feed on all kinds of vertebrate animals and some snakes also feed on invertebrates. The sea snakes are primarily piscivorous and all of them possess venom. The snakes locate their prey either by sight or by chemical cues, through their bifid tongue. The chemical signal from the tongue is transmitted to Jacobson's organ; a special sensory organ located in the roof of the mouth. Several snakes (Pythons and Pit vipers) also possess additional thermal receptors on their head either on the loreal region or on the lip scales. These thermal receptors aid the snakes to detect the body heat of warm-blooded vertebrate animals at night. Specialized front or rear teeth enable the venomous snakes in delivering venom. The specialized teeth (fangs) are hollow like hypodermic needles. Most of the snakes are oviparous (lay eggs) and some are also ovo-viviparous (give birth to young ones). The only species of snake that has all parthenogenic females is the Common blind snake (*Ramphotyphlops braminus*).

Snakes are associated with mythology and Hindu culture as the symbol of love, fidelity and are often linked with Gods and Goddesses. They are very shy animals and often avoid human encounter. As a rule, snakes follow three basic principles of animal behavior- flight, fright and fight. Whatever species of snake it may be, it tries to escape at the first sight, if cornered, it tries to frighten the adversary and if still disturbed or handled it fights (bites). Hence it is necessary to know more about these reptiles to save them from being unnecessarily killed at first sight.

Out of 276 species of snakes in India, Orissa is home to more than 80 species, including 20 species of marine snakes (Family: Hydropidae). Among the terrestrial snakes only 8 species possess potential venom to kill a human and the rest are harmless to us. Out of the 8 species of potentially dangerous snakes found in Orissa, only four species, namely Common krait, Binocellate cobra, Monocellate cobra and Russell's viper,

are commonly found near human habitation and are responsible for maximum snakebite deaths. Though all species of sea snakes possess highly toxic venom, they rarely bite.

Snakebite

Snakebite is a common accident in India, probably next to road mishaps. It may also happen in case of carelessness on the part of human. Many times fatal bites occur during an attempt to handle the venomous snake or by putting hands or feet in places preferred by the snakes. We should also bear in mind that many of the professional snake catchers have paid with their lives due to their careless handling of snakes.

Snakebite death happens due to the effect of venom produced by the snakes in their venom gland located at the lateral sides of the head behind the eyes. The snake venom is a mixture of toxins and different enzymes, which produces its effect when injected in to the circulatory system of the body. The venom is mostly used by snakes to paralyze the prey and it also helps in partial digestion. Snakes also use venom to fight against the predators and to protect themselves. Depending on the effect of the snake venom, it can be broadly divided into two types- neurotoxic and haemotoxic. Some snakes possess both neurotoxins and haemotoxins.

The neurotoxic venom of Cobras and Kraits affect the central nervous system, which includes loss of muscle control. Typical symptoms are observed within a span of 30 minutes to 3 hours, like drowsiness, blurred vision, drooping of eyelids, difficulty in breathing etc. The most dangerous effect of this venom is paralysis of the diaphragm resulting in the inability to breathe, for which there is the necessity of assisted breathing mechanisms.

The haemotoxic venom affects circulatory system by destroying blood cells, preventing blood coagulation and causing local

tissue damage. Typical symptoms are observed instantly like severe pain, necrosis in the bitten area, swelling, oozing of blood, vomiting, nausea, headache and even bleeding in the internal organs.

Anti Snake Venom (ASV): Antivenom is a purified form of blood serum derived from horse or sheep, by injecting them a particular species of snake venom, till their blood develops enough antibodies to become hyper-immunized. There are two types of antivenom available in the market- monovalent antivenom (to neutralize the effect of a single species of snake venom) and polyvalent anti venom (to neutralize the effect of multiple species of snake venom). In India there are five pharmaceutical companies producing the polyvalent anti snake venom for the treatment of the Big4 venomous snakes. The Big4 venomous snakes include the Spectacled/ Binocellate cobra, Common krait, Saw-scaled viper and the Russell's viper. Based on the lethal doses of different species of the Big4 venomous snakes, the polyvalent anti snake venom is prepared composing different percentages of antivenom.

Death due to snakebite is not only caused by the effect of venom, but many people also die because of fear and ignorance. Credulous belief has led to many snakebite victims dying unnatural death, by wasting time on fruitless traditional practices. Bites due to venomous snakes are not always fatal, as it depends on the amount of venom injected into the victim's body. Snakebite death can be prevented if we know more about these mysterious reptiles.

Keep your house free from snakes

Most of the time snakes are found near human habitation for easy prey hunt, which increases chances of encounter. It is also observed that some snakes are active only during day time and some species are nocturnal. High snake density in many areas create panic among dwellers and increases the chance of snake-human conflict. Houses built near fields, farms with lots of rat holes, degraded termite mound and garbage dumping places with stones, pile stocks, etc. become favorable habitat for snakes. Sometimes it becomes very difficult to completely prevent the entry of snakes inside houses, as they can crawl on any support and can enter through outlets, windows, etc. The following tips may help to prevent conflict with snakes.

- The house should be made free from rodents and toads by using traps, rat poison and by hand picking the toads.
- Surroundings of the house should be cleaned by removing logs, stones, pile or brick stocks and any other garbage, which are preferred by snakes as shelters.
- Holes made by rats and termites should be packed up. Help of termite control organizations can be taken to weed out termites.
- All the openings and outlets of houses, like gaps between doors and windows, can be packed tightly using thick synthetic sponge or rubbers and opening of basin outlet and drains can be sealed during night time.
- In villages, firewood and cow dung piles can be stored outside the house and care should be taken while picking up for use.
- Fine wire-mesh or nylon nets should be used in windows to get rid of snakes as well as mosquitoes, flies and scorpions.
- Mosquito nets should be used during night. It should be a must for people sleeping on ground or in tents.

- Snakes also avoid the smell of Carbolic acid and its derivatives like Phenyl, but one should be very much careful while using the chemicals and should be kept out of the reach of children.

First aid for snakebite

Do's

- Take the victim to a safe place and give assurance that he/she will be cured.
- It is always advisable to take the victim to the nearest hospital having anti snake venom and the necessary instruments to treat snakebite because anti snake venom is the only solution when sufficient venom has been injected to the body.
- Remove any tight outfit and ornaments from the body, which may obstruct blood circulation.
- Time is very crucial; so the people around the victim should act quickly in organized manner, for arrangement of vehicle, money for treatment, in giving assurance to the victim and for the first aid treatment.

Dont's

- Don't waste time, and don't make the victim do any kind of physical work.
- Don't panic; don't depend on local healer or tantrik, whose treatment doesn't have any scientific evidences, except for psychological relief.
- Don't take any food or liquid, which may obstruct breathing and also don't give any alcoholic drinks to the victim.
- Don't use tourniquet or don't cut the bitten area.

First aid

The first aid treatment is divided into two categories based on the local symptoms.

- Local symptoms like swelling, pain, burning sensation and discolouration of the bitten area are of the bite by Cobras and Vipers (both pit and pit-less vipers). Do not walk or do any work; do not tie anything near the bitten area, not even pressure bandage; do not cut or squeeze the bitten area; do not waste time and take the victim to the nearest hospital.
- Absence of local symptoms after the snakebite means it could be the bite by Kraits or other harmless snakes. Apart from following the do's and do not's, apply a pressure bandage by wrapping a 3-4 inch width cotton cloth or crape bandage and it should be applied as tightly as for a sprained ankle; splint can be used for fixation of the area. A pressure bandage applied to a bitten limb will slow down the spreading of venom until the victim reaches the hospital (within 1-1.5 hrs), but it traps venom in that compartment running the risk of amplified local tissue damage. Krait's venom is known to be highly toxic, yet it does not cause serious local tissue damage. Hence, there is little risk of tissue damage by applying the pressure bandage. It is also harmless to apply a pressure bandage for the nonvenomous snakebite.



Demonstration of applying pressure bandage by using splint

Snakebite Treatment

This section is slightly modified from the recommendations made in the WHO/SEARO guidelines for the Clinical Management of Snakebites in the Southeast Asian Region (Dr. David Warrell, 1999) keeping intact the basic theme.

Common krait (*Bungarus caeruleus*). Apply pressure bandage to the bitten limb, do not allow the patient to walk or to do any work, proceed immediately to a hospital. The victim shall be treated with polyvalent ASV. If the victim complains about difficulty in breathing, he/she should be placed on assisted breathing (ventilator). Neuromuscular transmission can often be dramatically improved with an anti-cholinesterase drug such as neostigmine or edrophonium. Atropine should be given as well.

Note: local symptoms from bites by this genus may be minimal and should not be taken as a sign of no envenomation.

Banded krait (*Bungarus fasciatus*). First aid application same as in case of Common krait. Although there is no specific antivenin for this species, sometimes the victim responds to the polyvalent ASV. If the victim complains about difficulty in breathing, he/she should be placed on assisted breathing (ventilator). Neuromuscular transmission can often be dramatically improved with an anticholinesterase drug such as neostigmine or edrophonium. Atropine should be given as well.

Note: local symptoms from bites by this genus may be minimal and should not be taken as a sign of no envenomation.

Binocellate cobra (*Naja naja*). Do not apply pressure bandage, do not allow to walk or to do any work and immediately proceed to the hospital. The victim shall be treated with polyvalent ASV. If the victim complains about difficulty in breathing, he/she should be placed on assisted breathing (ventilator). Neuromuscular transmission can often be

dramatically improved with an anticholinesterase drug such as neostigmine or edrophonium. Atropine should be given as well.

Monocellate cobra (*Naja kaouthia*). Same as Binocellate cobra. Although there is no specific antivenin for this species, sometimes the victim responds to the polyvalent ASV. If the victim complains about difficulty in breathing, he/she should be placed on assisted breathing (ventilator). Neuromuscular transmission can often be dramatically improved with an anticholinesterase drug such as neostigmine or edrophonium. Atropine should be given as well.

King cobra (*Ophiophagus hannah*). Apply a compression bandage to the bitten limb, do not allow the patient to walk, proceed immediately to a hospital. Do not accept antivenom, unless they have antivenom specifically made for King cobra. If breathing becomes difficult because of severe neurotoxicity, whether or not antivenom has been administered, the patient should be placed on assisted breathing. Neuromuscular transmission can often be dramatically improved with an anticholinesterase drug such as neostigmine or edrophonium. Atropine should be given as well.

Russell's viper (*Daboia russelii*). Do not apply pressure bandage, do not allow the patient to walk, proceed immediately to a hospital. The victim needs to be treated with polyvalent ASV. The victim may develop severe systemic symptoms such as continuous flow of blood from the bitten area (incoagulable blood), hemorrhage, shock, and kidney failure. The victim has to be tested for BTCT for 20 minutes at the hospital and in severe case the doctors should be prepared to treat the kidney failure.

Sawscaled viper (*Echis carinata*). Same as Russell's viper. The victim should be treated with polyvalent ASV.

Bamboo pitviper (*Trimeresurus gramineus*). Do not apply pressure bandage, proceed immediately to a hospital, no need for antivenom, rather the victim can be treated with antibiotics and pain killers. Although the bite is not fatal, sometimes the secondary infections may lead to amputation of the bitten area.

During the treatment of snakebite....

1. Antivenom should only be administered under the supervision of physicians or qualified doctors, because anaphylaxis is more dangerous than the real snakebite.
2. Before antivenom is injected, epinephrine must be available to counter anaphylaxis. If the need arises to inject epinephrine, an antihistamine should also be applied to neutralize histamine release during the allergic reaction.
3. Antivenom should be used only for the Big4 venomous snake bite.
4. The doctor should monitor the patient for adverse reactions for at least one hour after antivenom is administered.



Pratyush Mohapatra

Annotated checklist of Amphibians and Reptiles of Similipal with their legal protection status under Wildlife (Protection) Act, 1972

Amphibians

Order: Anura (Frogs and Toads)

Family: Bufonidae Gray, 1825

<i>Duttaphrynus scaber</i> Schneider, 1799	None
<i>Duttaphrynus stomaticus</i> Lütken, 1864	None
<i>Duttaphrynus melanostictus</i> (Schneider, 1799)	None

Family: Dicroglossidae Anderson, 1871

<i>Euphlyctis cyanophlyctis</i> (Schneider, 1799)	Sch. IV
<i>Fejervarya orissaensis</i> (Dutta, 1997)	Sch. IV
<i>Fejervarya syhadrensis</i> (Annandale, 1919)	Sch. IV
<i>Hoplobatrachus crassus</i> (Jerdon, 1853)	Sch. IV
<i>Hoplobatrachus tigerinus</i> (Daudin, 1802)	Sch. IV
<i>Sphaerothera breviceps</i> (Schneider, 1799)	None
<i>Sphaerothera dobsonii</i> (Boulenger, 1882)	None
<i>Sphaerothera rolandae</i> (Dubois, 1983)	None

Family: Microhylidae Günther, 1858

<i>Kaloula taprobanica</i> (Parker, 1934)	None
<i>Microhyla ornata</i> (Duméril & Bibron, 1841)	None
<i>Ramanella variegata</i> (Stoliczka, 1872)	None
<i>Uperodon globulosus</i> (Günther, 1864)	None
<i>Uperodon systoma</i> (Schneider, 1799)	None

Family: Ranidae Rafinesque-Schmaltz, 1814

<i>Hylarana malabarica</i> (Tschudi, 1838)	None
--	------

Family: Rhacophoridae Hoffman, 1932

<i>Chiromantis</i> sp.	None
<i>Philautus similipalensis</i> Dutta, 2003	None
<i>Polypedates maculatus</i> (Gray, 1834)	None
<i>Polypedates teraiensis</i> (Dubois, 1987)	None

Reptiles

Order: Testudines (Turtles and Tortoises)

Family: Bataguridae Gray, 1869

<i>Batagur tecta</i> (Gray, 1831)	Sch. I
-----------------------------------	--------

18

<i>Batagur tentoria</i> (Gray, 1843)	None
<i>Melanochelys tricarinata</i> (Blyth, 1856)	Sch. I
<i>Melanochelys trijuga</i> (Annandale, 1913)	None
Family: Testudinidae Gray, 1825	
<i>Indotestudo elongata</i> (Blyth, 1853)	Sch. IV
Family: Trionychidae Bell, 1828	
<i>Lissemys punctata</i> (Bonnaterre, 1789)	Sch. I
Order: Crocodylia (Crocodiles)	
Family: Crocodylidae Gray, 1825	
<i>Crocodylus palustris</i> Lesson, 1831	Sch. I
Order: Sauria (Lizards)	
Family: Agamidae Gray, 1825	
<i>Calotes versicolor</i> (Daudin, 1802)	None
<i>Psammophilus blanfordianus</i> (Stoliczka, 1871)	None
<i>Sitana ponticeriana</i> (Cuvier, 1844)	None
Family: Chamaeleonidae Gray, 1825	
<i>Chamaeleo zeylanicus</i> Laurenti, 1768	Sch. II
Family: Eublepharidae Boulenger, 1883	
<i>Eublepharis hardwickii</i> Gray, 1827	None
Family: Gekkonidae Gray, 1825	
<i>Cyrtodactylus nebulosus</i> Beddome, 1870	None
<i>Hemidactylus brookii</i> Gray, 1845	None
<i>Hemidactylus flaviviridis</i> Ruppel, 1840	None
<i>Hemidactylus frenatus</i> Schlegel, 1836	None
<i>Hemidactylus leschenaultii</i> Duméril & Bibron, 1836	None
<i>Hemidactylus</i> sp.	None
Family: Lacertidae Cope, 1864	
<i>Ophisops jerdoni</i> Blyth, 1853	None
Family: Scincidae Gray, 1825	
<i>Riopa albopunctata</i> (Gray, 1846)	None
<i>Lygosoma punctata</i> (Gmelin, 1799)	None
<i>Eutropis beddomii</i> (Jerdon, 1870)	None
<i>Eutropis carinata</i> (Schneider, 1801)	None
<i>Eutropis macularia</i> (Blyth, 1853)	None
<i>Sepsophis punctatus</i> Beddome, 1846	None
Family: Varanidae Gray, 1827	
<i>Varanus bengalensis</i> (Daudin, 1802)	Sch. I
<i>Varanus flavescens</i> (Hardwicke & Gray, 1827)	Sch. I

Order: Squamata (Snakes)**Family: Boidae Gray, 1842***Eryx johnii* (Russell, 1801) Sch. IV*Gongylophis conicus* (Schneider, 1801) Sch. IV*Python molurus molurus* (Linnaeus, 1758) Sch. I**Family: Colubridae Cope, 1893***Ahaetulla nasuta* (Lacepede, 1789) Sch. IV*Amphiesma stolatum* (Linnaeus, 1758) Sch. IV*Argyrogena fasciolata* (Shaw, 1802) Sch. IV*Atretium schistosum* (Daudin, 1803) Sch. II*Boiga foresteni* (Duméril, Bibron & Duméril, 1854) Sch. IV*Boiga trigonata* (Schneider, 1802) Sch. IV*Chrysopelea ornata* (Shaw, 1802) Sch. IV*Coelognathus helena* (Daudin, 1803) Sch. IV*Coelognathus radiatus* (Schlegel, 1837) Sch. IV*Dendrelaphis tristis* (Daudin, 1803) Sch. IV*Enhydryis enhydryis* (Schneider, 1799) Sch. IV*Lycodon aulicus* (Linnaeus, 1758) Sch. IV*Lycodon jara* (Shaw, 1802) Sch. IV*Lycodon striatus* (Shaw, 1802) Sch. IV*Macropisthodon plumbicolor* (Cantor, 1839) Sch. IV*Oligodon arnensis* Shaw, 1802 Sch. IV*Psammodynastes pulverulentus* (Boie, 1827) Sch. IV*Ptyas mucosus* (Linnaeus, 1758) Sch. II*Sibynophis sagittarius* (Cantor, 1839) Sch. IV*Xenochrophis piscator* (Schneider, 1799) Sch. II**Family: Elapidae Boie, 1827***Bungarus caeruleus* (Schneider, 1801) Sch. IV*Bungarus fasciatus* (Schneider, 1801) Sch. IV*Naja kaouthia* Lesson, 1831 Sch. II*Naja naja* (Linnaeus, 1758) Sch. II*Ophiophagus hannah* (Cantor, 1836) Sch. II**Family: Typhlopidae Boulenger, 1891***Grypotyphlops acutus* (Duméril, Bibron & Duméril, 1844) Sch. IV*Ramphotyphlops braminus* (Daudin, 1803) Sch. IV**Family: Viperidae Bonaparte, 1840***Daboia russelii* (Shaw & Nodder, 1797) Sch. II*Echis carinata* (Schneider, 1801) Sch. IV*Trimeresurus gramineus* (Shaw, 1802) Sch. IV

AMPHIBIANS



Dubois's tree frog and Pigmy tree frog sitting together

Pratyush Mohapatra

21

Ferguson's Toad

SVL: 50mm

Duttaphrynus scaber (Schneider, 1799)
Luni benga

Identification

- Head with distinct ridges and numerous spine like warts and flat tubercles; cranial ridges weak, parotid gland round and indistinct, tympanum round; toes scarcely webbed; males have single vocal sac.
- Dorsum olive brown or pinkish brown with darker markings on the head, under side of body yellowish.

Habitat and ecology: Nocturnal; mostly found in paddy fields and marshy grass lands; also observed hopping around with Common Asian toad; during non-breeding season they burrow themselves below rocks or rotten logs. The male croak resembles that of grylids (tri...tri...tri...), which makes them difficult to locate. Breeding takes place during monsoon (July-October), amplexing pairs were observed during late night and egg laying process lasts till early morning. The female lays eggs in a chain. Diet: insects, snails and other invertebrates.

Distribution: Orissa: Found in the outskirts of Similipal, also found throughout the state. Elsewhere in India: Peninsular India (Andhra Pradesh, Tamil Nadu, Kerala and Karnataka). Elsewhere outside: Sri Lanka.



Pratyush Mohapatra

Marbled Toad

SVL: 90mm

Duttaphrynus stomaticus (Lütken, 1862)
Katha Benga

Identification

- Body oval; head broader than long; snout obtuse, round and without ridge; tympanum distinct and vertically oval; parotids elliptical and flat; dorsum with numerous small rounded and flat warts; cranial and canthal ridges absent.
- Light olive or grey or yellowish in colour, marbled with small dark olive blotches. Ventral side uniform yellowish white, often marbled with dark in the thoracic region.

Habitat and ecology: Nocturnal; mostly found in cultivated land, near human habitation, plantations and occasionally found inside forest; active during rainy seasons, and can be seen on roads. In some localities, this species is found along with the Common Asian toad. Diet: insects, snails and other invertebrates.

Distribution: Orissa: More common in the Southern Similipal, also found in northern and western Orissa. Elsewhere in India: Rajasthan, Punjab, Haryana, Uttar Pradesh, Uttarakhand, Assam, West Bengal, Bihar, Andhra Pradesh; Maharashtra, Karnataka, Western and Eastern Himalayas. Elsewhere outside: Sri Lanka, Iran and southern Afghanistan to Sind, Nepal and South of the Arabian Peninsula.

**Common Asian Toad**

SVL: 110mm

Duttaphrynus melanostictus (Schneider, 1799)
Luni benga; Sinduria bengga

Identification

- Relatively larger toad, with distinct and wider head; snout pointed; densely arranged black tipped warts on head and back of the body; distinct cranial ridge and canthal ridge on the head; parotid gland "bean" shaped and shorter than the head length; pupil horizontal; tympanum distinct and round.
- Body colour brown or grey with prominent black tipped warts; ventral colouration yellowish white, brown or grey; throat and breast sometimes marbled with black.

Habitat and ecology: Nocturnal, also active during day time in cloudy weather; found near human settlements, streams, paddy fields, open cultivated land, plantations; commonly seen in corners of houses, below rocks, rotten roots of trees and very interestingly they have instinct to return to the same place after foraging. Breeding in three phases; during moonsoon, winter and summer. Male calls in continuous trick... trick... trick... Diet: insects, snails and other invertebrates.

Distribution: Orissa: Found throughout Similipal, also throughout the state. Elsewhere in India: Throughout; Elsewhere outside: Hong Kong, China, Sri Lanka, Thailand, Malaysia, Philippines, Indonesia, Myanmar, Nepal and Pakistan.



Indian Skipper Frog

SVL: 70mm

Euphlyctis cyanophlyctis (Schneider, 1799)

Pani benga

Identification

- Body oblong and flat; snout obtusely pointed; limbs muscular; dorsally situated eyes; toes are completely webbed; dorsal skin smooth with rounded granules or small tubercles.
- Body colour yellow, brown or olive grey with irregular spots or blotches; several colour morphs observed in different localities. Sides of the body and thighs with dark spots; the ventral colour is pure white or sometimes marbled with black.

Habitat and ecology: Active during day and night; aquatic, mostly confined to water bodies and lives in all sorts of temporary or permanent water bodies like ponds, pools, ditches, streams and rivers. Highly adaptable species; breeding throughout the year. Diet: insectivorous.

Distribution: Orissa: Commonly encountered in Similipal, also common all over the state. Elsewhere in India: Throughout. Elsewhere outside: Sri Lanka, Pakistan, Afghanistan, Nepal, Bhutan, Bangladesh and Myanmar.



Pratyush Mohapatra



M.V. Nair



Pratyush Mohapatra

Dutta's Cricket Frog

SVL: 60mm

Fejervarya orissaensis (Dutta, 1997)

Pani benga

Identification

- A medium sized frog, body heavily built, snout pointed, eyes bulging, tympanum distinct and rounded; fingers and toe tips rounded; body with distinct ridges and tubercles along the lateral side. Males are much smaller than the females.
- Body olive grey or brick red, a 'V' shaped marking between the eyes; dark irregular blotches on the dorsum; with or without yellowish narrow or wide vertebral band; limbs with dark bands, lips with thick bands, ventral side white, throat in male with black patches.

Habitat and ecology: Nocturnal; found in temporary pools, agricultural fields, grass lands and near hill streams. During winter they hide under rock boulders, below logs and leaf litter. Breeding takes place during monsoon. Male calls in low frequency crook....crook...; eggs are laid in open temporary rain water pools. Diet: insects and larvae.

Distribution: Orissa: In Similipal found near Nawna, Lulung, Gurguria, Jenabil and other grass land areas; also found throughout the state.



Pratyush Mohapatra

Syhadra Cricket Frog

SVL: 40mm

Fejervarya syhadrensis (Annandale, 1919)

Pani benga

Identification

- Body elongated; snout pointed; distinct longitudinal ridges on the dorsum; toes partially webbed.
- Dorsum brown with scattered dark patches; with or without yellowish narrow or wide band; thigh with dark bands; belly pure white. During breeding season males are seen with dark throat.

Habitat and ecology: Active during day and night, found on the forest floor, near temporary pools, paddy fields, grass lands and hill streams. During winter they hibernate under rock boulders, logs and leaf litter. Breeding takes place during monsoon. Males call in chorus, typical of *Gryllid*, in high frequency. Diet: insects, spiders and snails.

Distribution: Orissa: Commonly found in Similipal, also found throughout the state. Elsewhere in India: Throughout. Elsewhere outside: Nepal and Pakistan.

Remark: Three distinct colour morphs are found in Similipal: with no mid-dorsal line, with thin mid-dorsal line and with a thick mid-dorsal band.



S. K. Dutta

Jerdon's Bull Frog

SVL: 100mm

Hoplobatrachus crassus (Jerdon, 1853)

Cheli benga

Identification

- Stocky bodied; snout pointed, longer than wide; legs short and toes fully webbed, dorsal skin smooth with 10-14 discontinuous longitudinal ridges or folds, sides of the body smooth or warty; ventral smooth.
- Body colour olive, yellowish green or greyish brown with irregular dark spots or blotches, thigh with dark bands, ventral white with or without dark spots and stripes, some individuals with mid-dorsal line.

Habitat and ecology: Active during day and night; semi aquatic, mostly found in low land area, cultivated fields and swamps. During winter they hide below rocks or burrow inside loose soil. Breeding takes place during monsoon season. Diet: insects, frogs of smaller size, and worms.

Distribution: Orissa: In Similipal found all over the plains, in paddy fields and water logged area; also found throughout the state. Elsewhere in India: Andhra Pradesh, Kerala, Tamil Nadu, Karnataka, Uttar Pradesh, Madhya Pradesh, West Bengal, Arunachal Pradesh and Assam. Elsewhere outside: Sri Lanka and Nepal.



Pratyush Mohapatra



S. N. Mishra



M. V. Nair

Indian Bull Frog

SVL: 160mm

Hoplobatrachus tigerinus (Daudin, 1803)
Brahmani benga

Identification

- Body stout and elongated; head and snout pointed; legs long and muscular; dorsum with many longitudinal folds; tympanum distinct and round (bigger than eye); legs partially tuberculated.
- Dorsum greyish, greenish or yellowish (in breeding males) with irregular dark olive blotches, a light or yellow mid-dorsal line extends from the tip of the snout to the posterior end, yellowish white band passes on the lateral sides of the body; dorsal side of the limbs spotted or with stripes; ventral pure white with dark spots on the throat.

Habitat and ecology: Mostly nocturnal but often seen inside bushes along the edge of water bodies during day time; live in ponds, permanent water bodies, flooded agricultural fields, in low lands, grass fields with standing water. Breeding during monsoon season, males call in chorus, like the call of crow. Diet: wide range of insects and larvae; also eats crabs, frogs, small lizards and even snakes, small mammals and birds.

Distribution: Orissa: Throughout water logged area of Similipal, also found throughout the state. Elsewhere in India: throughout. Elsewhere outside: Pakistan, Nepal, Bangladesh and Madagascar (introduced).



Short-Headed Burrowing Frog

SVL: 55mm

Sphaerotheca breviceps (Schneider, 1799)

Mati pota Benga

Identification:

- Body globular, with short legs; head short and wide; snout rounded; a distinct fold from the posterior corner of eyes to fore limb; pupil lozenge shaped; fingers and toes half webbed. Dorsum smooth or granular with irregular tubercles, warts and short longitudinal folds; a distinct, sharp edged, shovel shaped metatarsal tubercle at the hind feet.
- Body colour variable from grey to light brown with olive pattern or marbling; a dark inter orbital bar is present; a dark band extends from the tip of the snout to the supratympanal fold; a mid dorsal line may be present or absent; lateral sides of the body marbled; the limbs have broad olive bands; ventral side whitish or light pinkish in colouration.

Habitat and ecology: Nocturnal; found in open fields, in sal forest and gardens. During non-breeding season they are found below rocks, rotten logs and deeply burrowed in loose soil. They have a tremendous tendency to burrow quickly into loose soil using their hind limbs. Diet: insects like termites, ants and beetles.

Distribution: Orissa: Common in plains in Similipal during rainy season; also found throughout Orissa. Elsewhere in India: Rajasthan, Punjab, Uttar Pradesh, West Bengal, Tamil Nadu, Kerala, Maharashtra, and Karnataka. Elsewhere outside: Sri Lanka, Pakistan, Nepal and Myanmar.



S. K. Dutta



S. K. Dutta

Dobson's Burrowing Frog

SVL: 60mm

Sphaerotheca dobsonii (Boulenger, 1882)

Matipota matia benga

Identification

- Body stout, toad like; globular, with short legs; head short and wider; snout rounded; tympanum small; pupil lozenge shaped; dorsum smooth; fingers and toes half webbed; inner metatarsal tubercle shovel shaped and sharp edged.
- Body colour grey or brownish, variable; with or without marbling; a dark band extends from the tip of the snout through nostril and eye to the supratympanal fold; groin marbled; the limbs have broad olive bands; ventral side is whitish or light pinkish in colouration, sometimes spotted with brown.

Habitat and ecology: Nocturnal; burrowing, mostly found below rocks or inside loose soil. Like the Indian burrowing frog, this species is also active only during monsoon seasons after heavy shower. The anti-predator behavior like swelling of body and urination is observed when handled or cornered by predators. Diet: termites, ants, other insects and earth worms.

Distribution: Orissa: In Similipal found in the Sal patches; also found in Cuttack; Keonjhar and Mayurbhanj Districts. Elsewhere in India: Karnataka, Tamil Nadu and Andhra Pradesh.



Pratyush Mohapatra

Indian Burrowing Frog

SVL: 40mm

Sphaerotheca rolandae (Dubois, 1983)

Chota matipota benga

Identification

- Body globular, stocky; head small; a distinct metatarsal tubercle at the base of the foot, small tubercles on the body with short longitudinal folds along the dorsum.
- Body colour pale brown to grey, sometimes olive with dark irregular patches, often a dark band is present between the eyes; limbs with alternate dark and light transverse bands.

Habitat and ecology: Fossorial or lives underground, nocturnal in habit, mostly found in grass lands with loose sandy soil or in agricultural fields. The male croak is with short notes "peeee...peeee.....peeee.....". Male and females are of almost equal size. Diet: small insects like termites and ants.

Distribution: Orissa: In Similipal common in the grass lands and in plains; also found throughout the state. Elsewhere in India: Kerala, Madhya Pradesh, Andhra Pradesh, Tamil Nadu, and West Bengal. Elsewhere outside: Sri Lanka.



Pratyush Mohapatra

Painted balloon Frog

SVL: 50mm

Kaloula taprobanica (Parker, 1934)

Sinduria phutka bengal

Identification

- Body globular with a small head, wider than long; snout very short and blunt; fingers well developed with adhesive pad; two metatarsal tubercles where the inner tubercle is laterally compressed and spade-like; dorsum smooth or has small tubercles; ventral granulated.
- Colour brown or dark brown, head dorsally and laterally with reddish-orange bands; a lateral dark band extends along the flanks from eye to groin; limbs dark greyish, dotted with dark brown.

Habitat and ecology: Nocturnal; found in forest, plantation area and also near human habitation; found inside tree holes or below rocks. The frogs spend the whole dry period under the soil or in tree holes and enter into water only during breeding season. When disturbed, the frog display a typical threat posture by pressing the head below the shoulders showing the prominent red colour. Diet: insects of wide range.

Distribution: Orissa: In Similipal this species is found throughout the forest, also found throughout Orissa. Elsewhere in India: West Bengal, Bihar, Madhya Pradesh, Karnataka, Tamil Nadu. Elsewhere outside: Sri Lanka.



Ornate Narrow-Mouthed Frog

SVL: 25mm

Microhyla ornata (Duméril & Bibron, 1841)

Chuin benga

Identification

- A small frog with triangular shaped body and pointed head; dorsal skin smooth and with some tubercles on the lateral side.
- Body colour light brown, olive-greyish with dark grey pattern; dorsum with dark arrow shaped marking, which varies in different localities.

Habitat and ecology: Terrestrial and nocturnal in habit, mostly found in grasslands, near the source of temporary water bodies, ponds, near hill streams and agricultural fields. During winter months they are seen below rock boulders, logs and leaf litter near the water bodies. This is one of the common microhylids of the state and is the smallest of all the Indian microhylid species. Males call trrk...trrk. Diet: insects of different species.

Distribution: Orissa: Found throughout Similipal; also found throughout the state. Elsewhere in India: Throughout. Elsewhere outside: Sri Lanka, Myanmar, Bhutan, Nepal, Pakistan, China, Japan, Taiwan and Bangladesh.



M. V. Nair



Pratyush Mohapatra



Pratyush Mohapatra

Variegated Ramanella

SVL: 30mm

Ramanella variegata (Stoliczka, 1872)
Suneli benga

Identification

- A small frog; body flattened, neck slightly distinct, skin entirely smooth and slimy; large and triangular discs on fingers; webbing on toes rudimentary; males have single vocal sacs.
- Body colour olive brown, finely marbled with yellow or golden; underside is white; dark patches on throat.

Habitat and ecology: Nocturnal; secretive in and seen only during breeding seasons (July-September). The calling males are not very easy to locate near temporary rainwater pools and puddles. The frog croaks very loudly with high pitch quay....quay..... quay.... while floating on the water. Sometimes they hide in burrows near water bodies; congregation of several individuals are observed inside termite mound. Diet: small insects.

Distribution: Orissa: In Similipal found in plains, abandoned paddy fields on the way to Betnoti, Khunta and Udala; also found throughout Orissa. Elsewhere in India: Madhya Pradesh, West Bengal, Tamil Nadu, Karnataka and Kerala. Elsewhere outside: Eastern Province; Northern Province, Anuradhapura, Mihintale, Palatupana and Opata of Sri Lanka.



Grey Balloon Frog

SVL: 55mm

Uperodon globulosus (Günther, 1864)

Kolathia bengalensis

Identification

- A stocky, globular frog; head small, snout obtusely pointed, legs short; dorsal skin smooth or with small tubercles; ventral skin smooth or wrinkled.
- Body colour uniform grey, brown or reddish brown; ventral side white or yellowish. In breeding males the dorsal colour is light brown or yellowish.

Habitat and ecology: Nocturnal; found in open forest with moist sandy soil, in agricultural fields. The individuals dig themselves inside the soil throughout the non-breeding season; reproduction begins after heavy shower in monsoon. They call in high pitch grunt (oink...oink...oink...). Diet: insects.

Distribution: Orissa: In Similipal near Thakurmunda area; also reported throughout the states. Elsewhere in India: West Bengal, Assam, Bihar, Madhya Pradesh, Gujarat, Maharashtra, Karnataka and Kerala.



Pratyush Mohapatra

Marbled Balloon Frog

SVL: 55mm

Uperodon systoma (Schneider, 1799)

Chitra bengalensis

Identification

- A medium sized frog with stocky and globular body; dorsal skin smooth or with minute tubercles. Two shovel-shaped metatarsal tubercles.
- Dorsal body colour dark brown marbled with dark yellow; ventral side whitish or yellowish.

Habitat and ecology: Nocturnal; lives in open fields, sal forests or in agricultural fields. This species is mostly active in rainy season and the rest of the time it is found underground. During breeding, several males call from temporary water pools and immediately sink in to water when disturbed. The males call in resonating booong...booong...booong... Diet: insects

Distribution: Orissa: In Similipal found in Lulung, Jashipur, Bangiriposi; also found throughout the states. Elsewhere in India: Himachal Pradesh, Rajasthan, West Bengal, Uttar Pradesh, Tamil Nadu, Kerala, Andhra Pradesh and Karnataka. Elsewhere outside: Sri Lanka (Alutnuwars, Colombo, Jaffna and Uva Province), Nepal and Pakistan.



Pratyush Mohapatra

Fungoid Frog

SVL: 50mm

Hylarana malabarica (Tschudi, 1838)

Nali benga

Identification

- Body smooth, slimy; snout obtusely pointed, tympanum large, rounded and distinct; tips of fingers and toes with discs; toes partially webbed.
- Body bright orange-red with some dark spots; lateral sides black; belly on the lateral sides variegated with dark patches; under part white; hind limb striped with dark bands.

Habitat and ecology: Nocturnal; terrestrial, also found on trees, during day time found below leaf litter, rock boulders, in caves and tree holes; active during evening hours, mostly seen near edge of water bodies; during summer season they are seen congregating near water source. Diet: wide range of insects, snails and sometimes frogs.

Distribution: Orissa: In Similipal found near hill streams and other water bodies near Pithabata and Lulung; also found in Sambalpur, Nayagarh, Angul, Dhenkanal, Keonjhar and Nuapada districts. Elsewhere in India: Western Ghats (Maharashtra, Goa, Karnataka and Kerala) and Madhya Pradesh.



Pigmy Tree Frog

SVL: 30mm

Chiromantis sp
Chuin buda bengga**Identification**

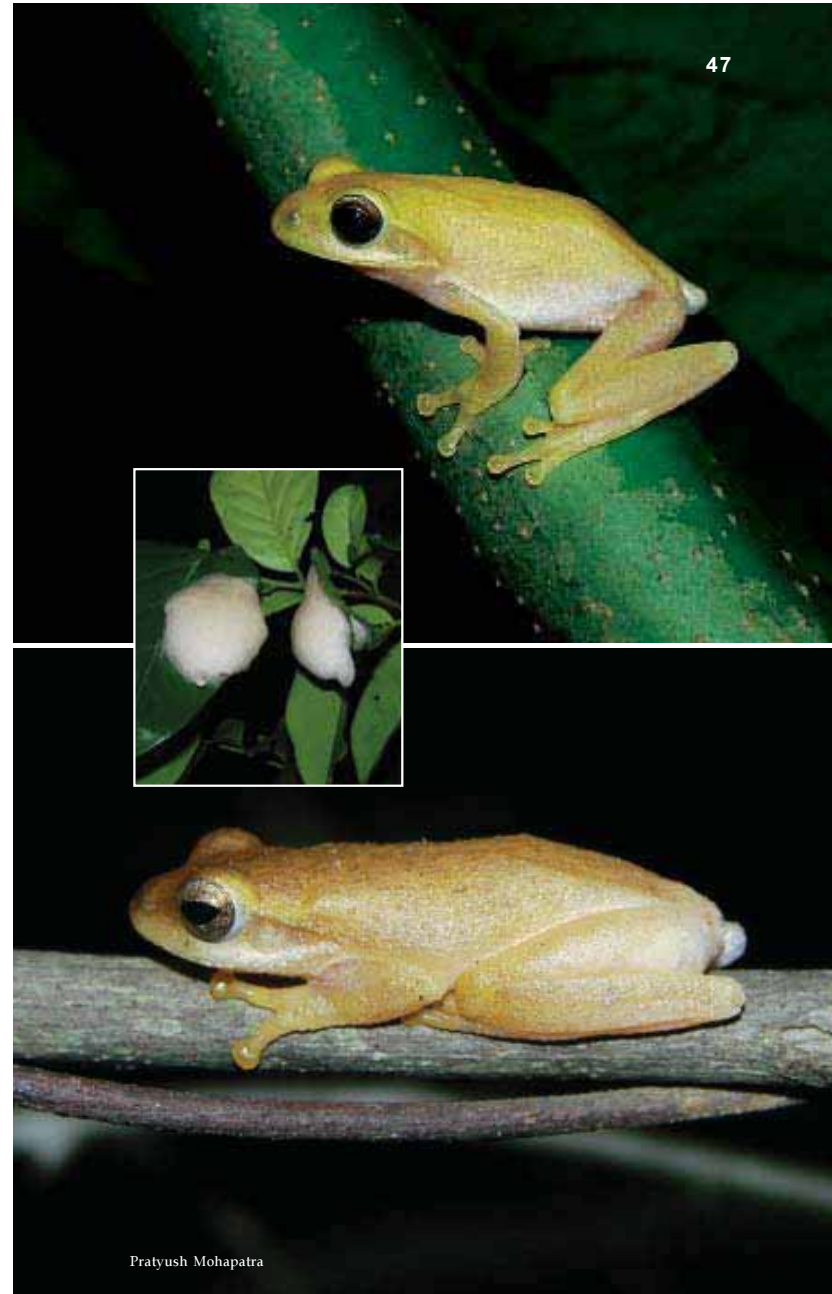
- A small frog; males smaller than the females, body elongated; head moderately distinct from body, large eyes.
- Body colour yellow or brown, without or with light brown stripes; belly pure white or light pinkish; hinder part and lateral sides of the body whitish.

Habitat and ecology: Arboreal; found in open scrub forests, gardens, near ponds, near hill streams; active only during the monsoons; during rest of the seasons they are only seen inside sheath of leaves of fleshy plants or near marshes. Females make foam nest near water bodies at 1-7 feet height. Diet: insects.

Distribution: Orissa: In Similipal found in Lulung, Pithabata, Gurguria, Chahala and Upper Barhakamuda area near hill streams or water bodies; also found in Mayurbhanj, Balasore, Dhenkanal, Cuttack, Khurda, Nayagarh and Ganjam districts.



Pratyush Mohapatra



Pratyush Mohapatra

Similipal Bush Frog

SVL: 30mm

Philautus similipalensis Dutta, 2003
Similipal buda benga

Identification

- A tiny frog; body smooth; snout obtusely pointed; small and round tympanum; lateral sides of the body with longitudinal tubercles; fingers and toes with adhesive pads.
- Body colour variable; dark grey to brown with more or less distinct light coloured bands; inner and outer side of thigh with black patches; lateral sides with irregular white patches; belly white in colour.

Habitat and ecology: Nocturnal; arboreal; lives in all types of forest and is active mostly during monsoon season. During non-breeding season they congregate near hill streams and found below rotten leaves in muddy banks of streams, below rock boulders along with other species of frogs like *Microhyla ornata*, *Fejervarya* sp. etc. Diet: insects

Distribution: Orissa: In Similipal (type locality) common throughout; also found in other forested areas of Mayurbhanj, Dhenkanal and Khurda Districts.



Common Indian Tree Frog

SVL: 80mm

Polypedates maculatus (Gray, 1834)

Katha bengali; Akhi dian bengali

Identification

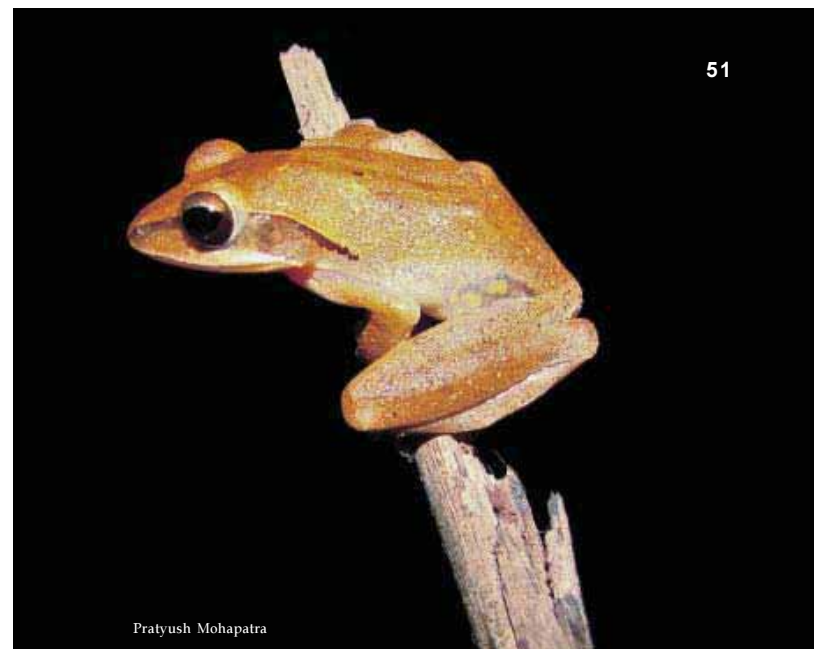
- Body elongated; head strikingly bony; tympanum quite distinct as large as the eye; dorsum smooth; belly feebly granular; toes moderately webbed, fingers and toes with adhesive pads or discs.
- Body colour variable; dorsum light brown, olive brown, reddish brown, yellowish brown or grey with or without deep brown patches; a dark streak passes through the eye extending beyond axilla; back side of the thigh with yellowish spots bordered with black.

Habitat and ecology: Nocturnal; arboreal; lives in dry deciduous to evergreen forest especially in habitats with rich vegetation; also found in agricultural field, fruit orchards and in houses. The species has its own territory and returns to the same refuge. Hibernation takes place inside tree holes, inside leaf sheath and also inside houses. Breeding takes place during monsoon; females lay eggs in a foam nest near water bodies. The male call starts with a low pitch dhuk-dhuk-dhuk to high pitch tak-tak-tak. Diet: insects.

Distribution: Orissa: In Similipal common throughout; also common throughout the state. Elsewhere in India: Throughout. Elsewhere outside: Sri Lanka and Nepal.



Pratyush Mohapatra



Pratyush Mohapatra



Pratyush Mohapatra

Dubois's Tree Frog

SVL: 70mm

Polypedates teraiensis (Dubois, 1986)

Akhi dian bengal

Identification

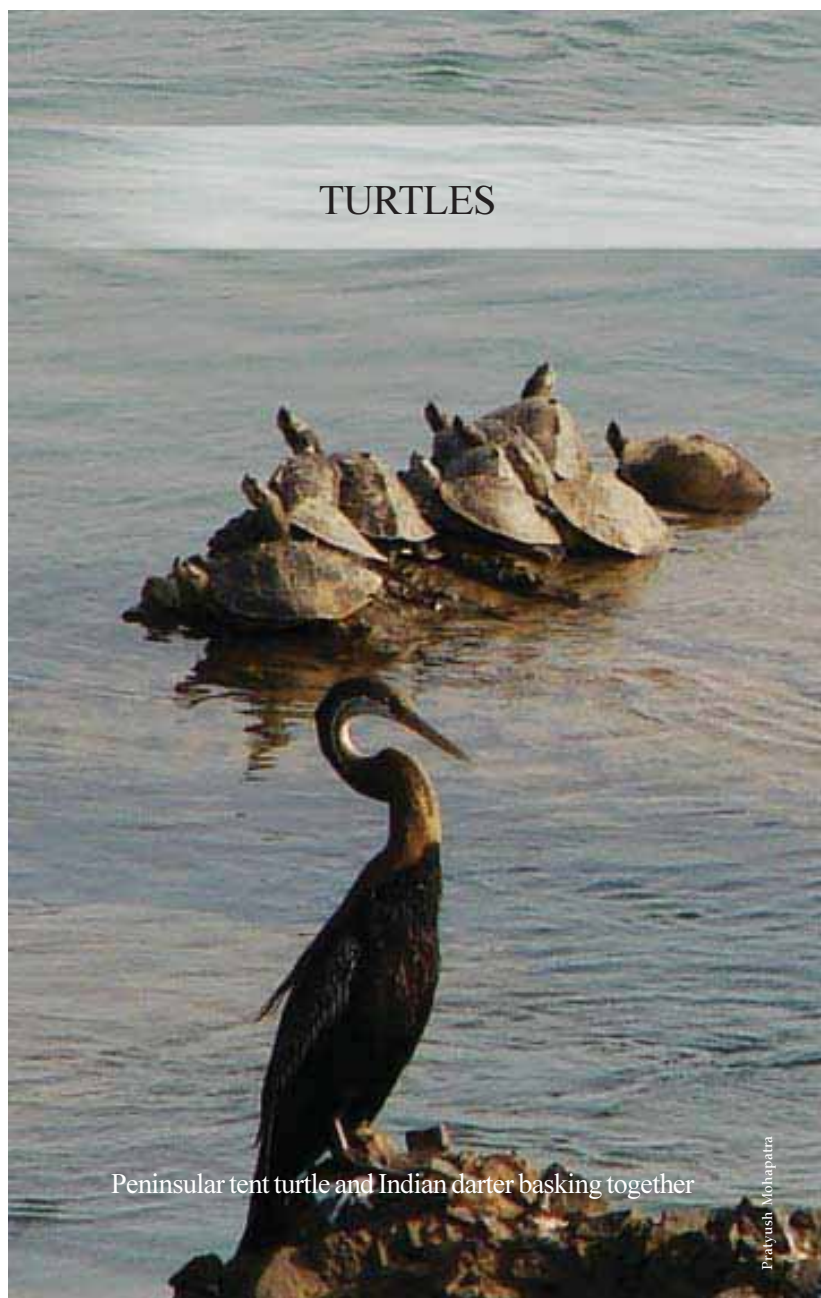
- Body elongated; snout more or less pointed; dorsal skin of head ossified *i.e.* attached to the rough skull bones; eyes large; tympanum distinct; fingers and toes with adhesive discs; toes partially webbed.
- Body colour variable; grey, reddish brown or brownish with four to six longitudinal stripes on the dorsum; limbs with dark stripes; venter uniform white or yellowish.

Habitat and ecology: Arboreal; mostly found in bushes, in plantations and gardens, rarely enters human habitation. In some areas live sympatric with *P. maculatus*. Breeding during monsoon; eggs inside a foam nest near water bodies. Male call resembles call of crow "crookk", in intervals. Diet: wide prey spectrum, mainly insects and sometimes frogs and lizards of its own size.

Distribution: Orissa: In Similipal found sympatric with Common Indian tree frog in Upper Barhakamuda, Lulung, Jenabil and Gurguria area; also known from Cuttack, Khurda and Keonjhar Districts. Elsewhere in India: West Bengal, Assam, Meghalaya, Manipur, Tripura, Nagaland; Arunachal Pradesh; Sikkim and Nicobar Islands. Elsewhere outside: Nepal, Myanmar and Bangladesh.



TURTLES



Peninsular tent turtle and Indian darter basking together

Pradyumn Mohapatra

Indian roofed turtle

Carapace: 180mm

Batagur tecta (Gray, 1831)

Nali beka katha kaincha

Identification

- Females larger than males; carapace elevated, oval with distinct vertebral keel; third vertebral shield much elevated and spike like; fourth vertebral shield longer than other shields. Posterior margin of carapace is not much serrated. The plastron is almost as long as the carapace.
- Carapace olivaceous with minute black spots with orange or reddish vertebral stripes. Head blackish, temporal region marked with thin orange or yellow lines, limbs dark olive with yellow spots, back of thigh with dark transverse streaks.

Habitat and ecology: Aquatic; inhabit standing water bodies, in ponds and pools with aquatic vegetation; also sometimes seen in rivers. Communal basking is seen on floating logs or sides of the pond. Breeding takes place during winter months, 2-10 eggs are laid in the sandy soil by digging up holes near the bank. Diet: insects, fishes and aquatic plants.

Distribution: Orissa: In Similipal found in rivers and other aquatic bodies in the plains; also found in Northern Orissa, north of the river Mahanadi. Elsewhere in India: Meghalaya, Assam, West Bengal, Bihar, Madhya Pradesh, Uttar Pradesh, Punjab, Rajasthan and Jammu and Kashmir. Elsewhere outside: Bangladesh Nepal and Pakistan.



M.V. Nair

Peninsular Tent Turtle

Carapace: 270mm

Batagur tentoria (Gray, 1834)

Katha kaincha

Identification

- Carapace elevated and oval in adults, vertebral keels prominent and abruptly forms a strong spinous process at the posterior margin of the third shield, fourth vertebral shield is much longer than other shields and fifth is broader than long and much broader than other shields; digits fully webbed.
- Carapace pale olivaceous, yellow streaks on the neck quite indistinct or absent. Head olivaceous, a distinct red mark behind the tympanum, a black streak runs above the upper lip; limbs devoid of any dark markings; plastron pinkish yellow, mostly with a single black blotch on each scute.

Habitat and ecology: Aquatic; found mostly in flowing water, in rivers with sandy or muddy bank. Females travel quite a long distance during egg-laying in winter season. 1-15 eggs are laid by digging a pit of nearly one foot in loose soil or sand. Communal basking is observed, where more than 20-30 turtles are seen on banks or on rocks. Diet: insects, frogs, fishes and other aquatic plants.

Distribution: Orissa: In Similipal found in Deo River; also found in Mahanadi and tributaries in districts of Cuttack, Jagatsinghpur, Puri, Khurda, Anugul and Dhenkanal districts. Elsewhere in India: West Bengal, Bihar, Uttar Pradesh, Madhya Pradesh, and Andhra Pradesh.



S. K. Dutta

Tricarinate Hill Turtle

Carapace: 220mm

Melanochelys tricarinata (Blyth, 1856)

Tinigaria pahadi kaincha

Identification

- Carapace elongated, dome shaped, with three distinct obtuse keels; plastron closely arched to the carapace by a suture. Males have a concave plastron.
- Carapace dark plum, olive or reddish brown in colour with pale yellow keels; plastron orange or yellowish; head and limbs pale grey or blackish; face with yellow or red stripe.

Habitat and ecology: Inhabits terrestrial terrain, in grass lands along the hill streams and rivers. It is crepuscular in habit, most active during early evening hours. 1-3 eggs are laid in two clutches in February-April and October-December; incubation period 60-72 days. Diet: omnivorous; wild fruits, snails and other invertebrates.

Distribution: Orissa: Only reported from Similipal Biosphere Reserve, specifically in swampy grass land of Upper Barhakamuda. Elsewhere in India: West Bengal, Jharkhand, Bihar and Assam. Elsewhere outside: Bangladesh and Nepal.



M. V. Nair

Eastern Black Turtle

Carapace: 400mm

Melanochelys trijuga indopeninsularis (Annandale, 1913)

Kala Kaincha/ Pahadi Kaincha

Identification

- Carapace elongated, dome shaped in adults, depressed in juveniles and tricarinated. Males have a concave plastron.
- Carapace brown or blackish; plastron usually dark with a pale yellow border, may be absent in older specimens; head greyish.

Habitat and ecology: Nocturnal; semiaquatic, found near aquatic bodies, grass land and hill streams in moist deciduous forest. Diet: mainly fruits, grasses, fresh water prawns, water hyacinth, and also scavenges long distance from water bodies. In captivity they are fond of snails.

Distribution: Orissa: In Similipal Biosphere Reserve specifically reported from Upper Barhakamuda and North Deo river; captive population at Ramatirtha; also found in Dhenkanal, Nayagarh and Boudh-Kandhamal. Elsewhere in India: West Bengal, Jharkhand and Bihar. Elsewhere outside: Bangladesh and Nepal.

Remark: This species is under severe threat due to trading of live individuals.



Pratyush Mohapatra

Elongated Tortoise

Carapace: 330mm

Indotestudo elongata (Blyth, 1853)

Haladia Katha Kaincha

Identification

- Carapace elongated, dome shaped, flattened on mid-body in adults; five vertebrals and four costals present on the carapace; tail longer and curved in males, terminating in a horny tubercle; limbs heavily scaled, club-footed.
- Dorsum yellowish, with variable amount of black markings; head pale yellow but during breeding season it turns slightly reddish. In juveniles carapace pure yellow with few black markings.

Habitat and ecology: Diurnal or crepuscular; terrestrial; lives in deciduous to evergreen forests, in rocky hilly areas; also found in Sal and Teak forests. Breeding throughout the year; 2-8 eggs are laid inside a pit dug by the female; incubation period up to 5 months. Diet: primarily herbivorous; feeds on fruits, flowers, grasses, leaves and fungi, occasionally feeds on dead animals.

Distribution: Orissa: In Similipal specifically known from Lulung, Thakuramunda and Bhanjabasa area; also reported from Kapilash area in Dhenkanal district, Baialishmauja, Cuttack district. Elsewhere in India: West Bengal, Assam, Meghalaya, Mizoram, Tripura, Bihar, Jharkhand and Uttar Pradesh. Elsewhere outside: Bangladesh, Thailand and other Southeast Asian countries.



Ishan Agarwal

Indian flapshell turtle

Carapace : 370mm

Lissemys punctata punctata (Bonnaterre, 1789)

Pani Kainchha / Pankua Kainchha

Identification

- Carapace semicircular, slightly dome shaped; plastron with soft semicircular flaps, which accommodate the retractable hind limbs. Limbs are fully webbed, with three claws on each foot.
- Carapace grey or olivaceous, with or without black bordered yellow marks; plastron yellowish brown; head with or without longitudinal markings.

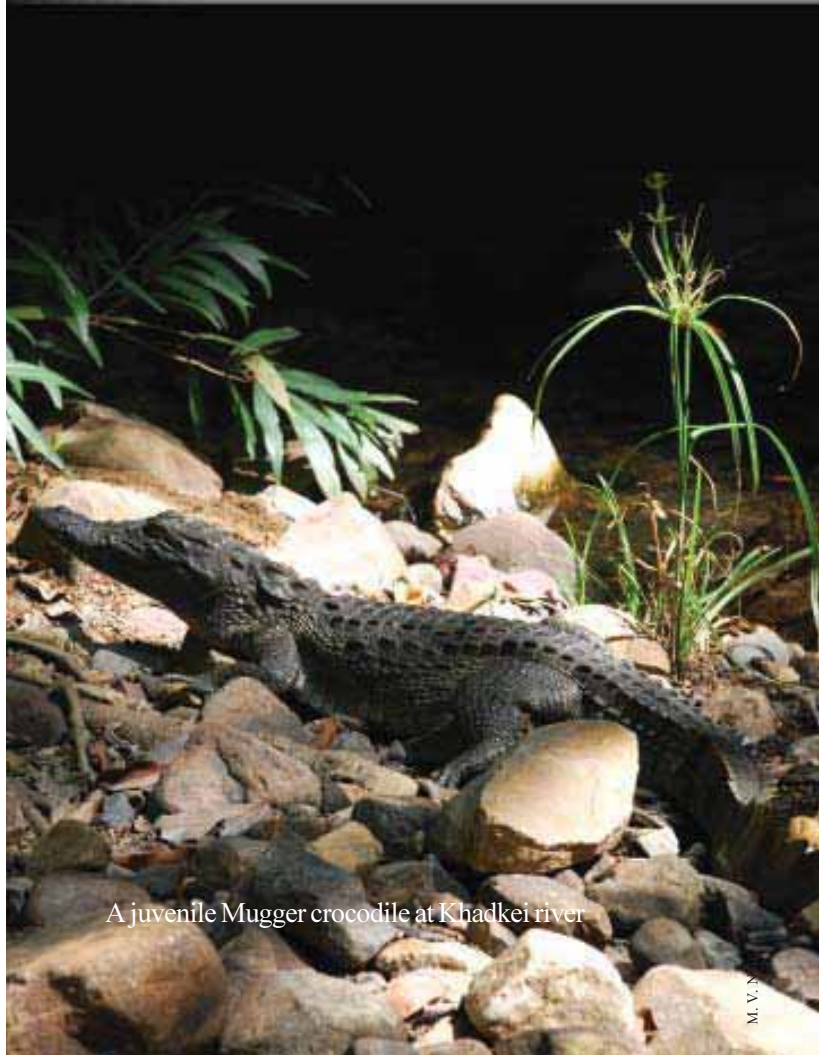
Habitat and ecology: Aquatic; found in ponds, ditches, lakes, marshes and rivers; carnivorous. Individuals are found hibernating in agricultural fields, bank of ponds and in marsh land. Breeding takes place during early summer; 5-15 eggs are laid inside soil; incubation period up to one year. Diet: omnivorous and voracious; feeds on fishes, frogs, snails, and shrimps; also scavenges on carrions.

Distribution: Orissa: In Similipal found in the water bodies in the plains; also found throughout the state. Elsewhere in India: Peninsular India: Uttar Pradesh, Madhya Pradesh, Andhra Pradesh, Tamil Nadu and Andaman Islands. Elsewhere outside: Bangladesh and Sri Lanka.



Pratyush Mohapatra

CROCODILE



A juvenile Mugger crocodile at Khadkei river

M. V. N.

63

Mugger Crocodile

Length: 5.00m

Crocodylus palustris Lesson, 1831

Kumbhira; Magara

Identification

- A large fresh water crocodile; snout relatively broad and heavy, forehead concave, ridges in front of the eyes absent, dorsal scales in 16-17 rows on the trunk, post occipital scutes absent, 13-14 pairs of teeth in the upper and 14-15 pairs in lower jaw.
- Juveniles light tan or brownish with dark cross bands on body and tail; adults grey to brownish, usually without the dark bands.

Habitat and ecology: Nocturnal, basking during daytime in winter season; inhabits marshes, lakes, rivers, dam and reservoirs. The adults can be dangerous to human. Mating in winter months; 10-50 eggs are laid in side the excavated pit made by the female in loose sandy soil; incubation period up to 80 days; parental care observed like in other crocodiles. Diet: juveniles feed on insects, fishes, frogs and other small vertebrates; adults feed on mammals, as large as deer and goats, wild boar, also on snakes, lizards and turtles.

Distribution: Orissa: In Similipal found in North Deo, East Deo, Khadkei rivers, a good number of captive populations in Ramatirtha; also found in Mahanadi (Satkosia gorge) and Kolab river. Elsewhere in India: Throughout, as far east as Assam and introduced in some states. Elsewhere outside: Bangladesh, Iran, Nepal, Pakistan and Sri Lanka, Myanmar and the Malay Peninsula.



Pratyush Mohapatra

LIZARDS



A Garden lizard in breeding colouration

Pratyush Mohapatra

65

Indian Garden Lizard

Length: 450mm

Calotes versicolor (Daudin, 1802)

Endua, Teneko, Kerkanta

Identification

- Common species of lizard in Orissa; can be identified by a large and distinct head, laterally compressed body with a fairly long tail; scales on the body pointing backwards and upwards; two separate spines above tympanum.
- Body colour variable; non-breeding individuals generally brown or greenish brown, with or without variegated pattern on the back; juveniles with two prominent cream coloured lateral lines. During breeding season, males become brown with crimson red anterior half with throat and legs sometimes black.

Habitat and ecology: Diurnal; arboreal; found in all kinds of habitat. Territorial activity observed prior to breeding (April-May), male combat by charging and biting each other. Females lay up to 15 eggs by digging loose soil during June-July. Juveniles come out during post-monsoon season (July-August). Diet: insects and other arthropods.

Distribution: Orissa: Widely distributed in Similipal; also fairly distributed throughout the state. Elsewhere in India: Throughout. Elsewhere outside: Afghanistan, Pakistan, Nepal, Bangladesh, Bhutan, China, the Malay Peninsula, Hong Kong, Sri Lanka, Thailand, Myanmar and Vietnam.



Pratyush Mohapatra

Indian Rock Lizard

Length: 400mm

Psammophilus blanfordanus (Stoliczka, 1870)

Endua, Tenko

Identification

- Body dorso-ventrally flattened, head comparatively large and set off from rest part of the body, males robust and larger than females; scales uniform and keeled.
- Males brown or greyish with dark brown or black markings on the dorsum. Breeding males crimson red with a dark band passing through the eyes; lateral sides of the body, belly, legs and tail blackish. Juveniles and adult females are brown or greyish brown with dark brown patches, which camouflage well with their surroundings.

Habitat and ecology: Diurnal; mostly confined near rocky area, arboreal in habit. The males maintain their own territory during breeding season (June-July); 7-8 eggs are deposited in a small pit dug by the female during July-August; juveniles appear during post monsoon seasons. Diet: all kind of insects and arthropods.

Distribution: Orissa: Quite abundant in Similipal; also recorded throughout the state. Elsewhere in India: Bihar, West Bengal, Madhya Pradesh, Andhra Pradesh, Tamil Nadu and Kerala.



Pratyush Mohapatra



M.V. Nair

Fan-Throated Lizard

Length: 100mm

Sitana ponticeriana Cuvier, 1844

Mati endua

Identification

- Body slender with a long tail; snout acute; hind limbs well developed without the 5th toe; scales keeled on the body, some scales along the lateral side and the thigh are with strongly projecting keels. Males have a gular pouch below the throat.
- Dorsum brown with dark rhomboidal pattern; males have bluish gular pouch during breeding season; belly light brown; outer side of thighs with orange stripes.

Habitat and ecology: Diurnal; terrestrial, sometimes climb on low bushes; found in dry deciduous forest, scrub forest, plantation area and also in coasts. Very fast and agile, even can run with the hind limbs. Mating during May-June, juveniles are seen during August-September. Diet: insects (ants, grubs, termites), spiders and other arthropods.

Distribution: Orissa: Found in the open and fringe forests of Similipal; found throughout the state. Elsewhere in India: Throughout peninsular India. Elsewhere outside: Nepal and Sri Lanka.

**Indian Chamaeleon**

Length: 270mm

Chamaeleo zeylanicus Laurenti, 1768

Bahurupa; Bahurupi; Pohola endua; Kuasapa; Maka sapa

Identification

- Head with a distinct helmet like bony projection, orbit large and movable, eye ball tiny. Dorsal scales enlarged and tuberculated, a low serrated dorsal crest extends till the tail; tail prehensile, as long as the body. Fingers and toes modified (syndactyle), which help them to walk by holding the twigs and branches; tail prehensile.
- Colour variable; the lizard has remarkable ability to camouflage instantly to the surroundings; green colour is dominant, which changes to shades of yellow, white and black.

Habitat and ecology: Diurnal; arboreal; spends most of the time on bushes, occasionally comes down to ground while moving from one bush to other. Produces a typical hissing sound when disturbed and with open mouth it inflates the body to frighten the adversary. Prey is caught by using its long and sticky tongue and once the prey is caught it is chewed and devoured; breeding during June-July; juveniles are seen during post-monsoon seasons. Diet: insectivorous.

Distribution: Orissa: Throughout Similipal and throughout the state. Elsewhere in India: Throughout the Peninsular India. Elsewhere outside: Pakistan and Sri Lanka.



East Indian leopard gecko

Length: 180mm

Eublepharis hardwickii Gray, 1827

Kalakuta, Kalakuta sapa

Identification

- Body robust; head large with distinct neck; tail shorter than the body length, cylindrical, segmented and swollen at the base; head covered with irregular polygonal scales; body with small, irregular, juxtaposed scales intermixed with tubercles larger than the usual scales; belly with rounded imbricate scales. Fingers and toes without lamellae.
- Body colour dark brown above with broad light coloured transverse markings; the first starts at the neck, the second at the mid-body and there are four or five on the tail.

Habitat and ecology: Nocturnal; terrestrial; found in dry deciduous forest below rock boulders; breeding takes place during June-July, a clutch of 2 eggs are laid. When disturbed it produces a screaming sound by raising the body. Diet: wide range of insects and other arthropods like scorpions and spiders.

Distribution: Orissa: In Similipal found throughout the forested area, specifically Chahala, Lulung, USBK and Jashipur; also found in the forest patches of the state. Elsewhere in India: West Bengal, Madhya Pradesh and Chattishgarh, Uttar Pradesh, Bihar and Jharkhand.



Pratyush Mohapatra



M. V. Nair



Pratyush Mohapatra

Clouded Ground Gecko

Length: 65mm

Geckoella nebulosa (Beddome, 1870)
Kalakuta**Identification**

- Body stout; tail shorter than body, swollen at the base and pointed; irregular tubercles interspaced with small granular scales, belly scales imbricate, toes without lamellae, pupil vertical.
- Dorsum light brown with dark brown, paired, transversely arranged spots or stripes continuing till the groin; belly light brown.

Habitat and ecology: Nocturnal; terrestrial, mostly active during evening hours; found in dry deciduous forest, below rotten logs, rocks, inside leaf litter. When caught, it makes a shrilling sound. Diet: mostly small insects like grylids, roaches, ants etc.

Distribution: Orissa: Commonly found in the dry deciduous patches of Similipal; also common throughout the state. Elsewhere in India: Andhra Pradesh, Tamil Nadu and Kerala.



M. V. Nair

Spotted Indian house gecko

Length: 70mm

Hemidactylus brookii (Gray, 1845)
Jhitipiti**Identification**

- A common species of gecko, body streamlined and flattened; head oval, covered with small scales; body covered with granular scales and rows of tubercles; tail with many spike-like tubercles. Males with 21-23 row of femoral and pre-cloacal pores.
- Body grey, brown or yellowish brown with dark spots arranged in groups; it can change the colour to camouflage to the surrounding.

Habitat and ecology: Nocturnal; mostly found on ground or bushes, also found in crevices or tree holes, below rock boulders; active during evening hours. It produces a loud "Chuck-chuck-chuck-chuck" call; 2 eggs are laid throughout the year. Diet: small insects like ants and winged termites.

Distribution: Orissa: Throughout Similipal and also found throughout the state. Elsewhere in India: Throughout. Elsewhere outside: Pakistan, Sri Lanka, Nepal, Bangladesh, Myanmar, Southern China and South-east Asia.



Pratyush Mohapatra

Indian house gecko

Length: 140mm

Hemidactylus flaviviridis Ruppell, 1835

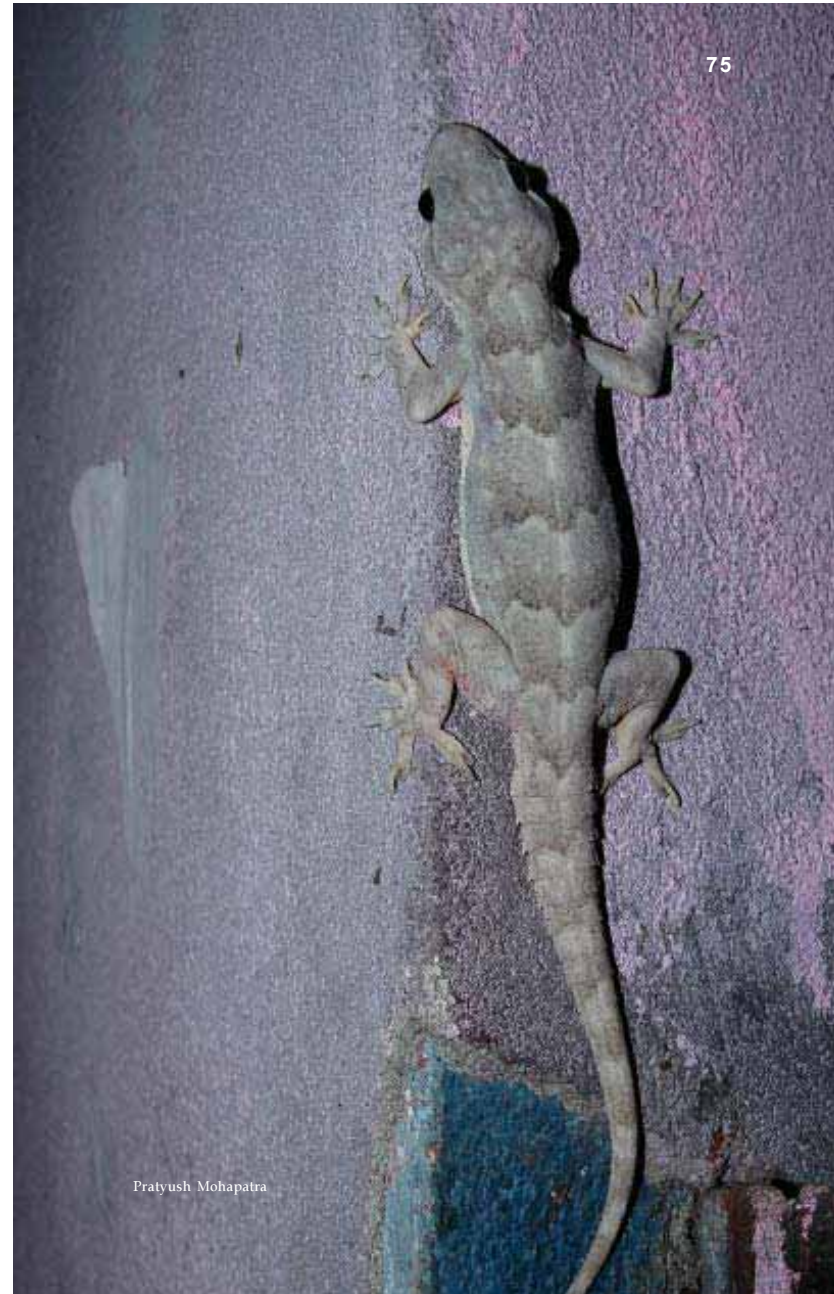
Jhitipiti

Identification

- Body flattened, tail widens strikingly behind the narrow base, without denticulate edge but has ventro-lateral row of irregular tubercles; males have 5-7 femoral pores on each side separated by at least six to eight scales; 7-10 lamellae under the first and 12-15 lamellae under the fourth toe.
- General body colour grey or yellowish grey; a dark streak passes from the nostril to the temporal region; dorsum has five dark irregularly undulated transverse bands; ventral side deep yellow.

Habitat and ecology: Nocturnal; arboreal; mostly seen in houses, in rock crevices, in large caves and on trees. Males maintain territory during breeding season. Breeding takes place all round the year except winter; 2 eggs are laid, incubation period up to 60 days. Diet: insects of various sizes.

Distribution: Orissa: In Similipal found in Pithabata, Jashipur, Chahala area; also found in Mayurbhanj, Keonjhar, Angul, Boudh, Bolangir and Kalahandi districts. Elsewhere in India: Throughout northern India. Elsewhere outside: Arabian Peninsula, Pakistan, Afghanistan, Nepal and Bangladesh.



Smooth house gecko

Length: 65mm

Hemidactylus frenatus (Dumeril & Bibron, 1836)

Jhitipiti

Identification

- Body cylindrical, neck wider; dorsum smooth with numerous flat and smooth tubercles; ventral scales smooth and imbricate; 23 pre-cloacal and femoral pores in continuous series; 4-6 lamellae under first and 9-11 under the fourth toe.
- Basic body colour grey, with large longitudinal rows of streaks bordered with light spots. The colour changes very fast from pale white to dark grey according to the surroundings, with or without the longitudinal streak.

Habitat and ecology: A species of dry deciduous and scrub forest; nocturnal; found under rock boulders, on bushes, on trees and most abundant near houses; actively forage during early evening hours on bushes. Diet: insectivorous.

Distribution: Orissa: Found throughout Similipal, also found throughout the state. Elsewhere in India: Throughout. Elsewhere outside: South and South East Asian countries.



Pratyush Mohapatra

Bark gecko

Length: 150mm

Hemidactylus leschenaulti Dumeril & Bibron, 1836

Jhitipiti

Identification

- Body flattened; snout obtusely pointed; tail strongly depressed, swollen at the base; covered above with small scales and series of 6 rows of enlarged pointed tubercles; males with 10-17 femoral pores on each side; separated by an interval of body scales.
- Dorsum grey or brownish with dark, transverse dark brown undulated markings; a dark streak behind the eye up to neck; ventral side whitish.

Habitat and ecology: Nocturnal; found on big trees, in caves, rock clefts and houses; often found basking during day time. Breeding all round the year, except winter months; clutch of 2 eggs are laid inside rock crevices, tree holes or in any safe place. Diet: insectivorous.

Distribution: Orissa: In Similipal found in the forest as well as in the forest rest house, also found throughout Orissa. Elsewhere in India: Kerala, Tamil Nadu, Maharashtra, Andhra Pradesh, Karnataka, Gujarat, Madhya Pradesh, Orissa, West Bengal and Rajasthan. Elsewhere outside: Sri Lanka.



Pratyush Mohapatra

East Indian Forest Gecko

Length: 210mm

Hemidactylus sp.**Identification**

- Body large and robust, flattened; head large and distinct; tail as long as the body; eyes large; ear opening distinct and slit like; dorsum with large trihedral tubercles in 16-18 rows; mid-dorsal line devoid of tubercles, smooth; inner thigh smooth; 10-11 lamellae under the 1st finger and 14 on the 4th; 17-19 femoral pores, separated by 4-5 pre-cloacal scales.
- Body colour variable, deep brown to dark grey; three chevron shaped transverse bands bordered with dark margins from axilla to groin; head un-patterned on the dorsal side, tail banded. Juveniles dark plum or blackish in colour with yellow transverse bands.

Habitat and ecology: Nocturnal; found in dry deciduous forest in caves, on trees and rarely enters in to forest fringe houses. During day time they can be found in the rock crevices, tree holes and also clinging to the roof of the caves; breeding throughout the year. Diet: insectivorous.

Distribution: Orissa: In Similipal observed near Jashipur and Bangiriposi area; also reported from Ghatgaon of Keonjhar district.

Remark: Recent taxonomic investigation is being carried out to describe this new species of lizard.



Pratyush Mohapatra



S. K. Dutta

Snake-eyed Lacerta

Length: 120mm

Ophisops jerdoni Blyth, 1853**Identification**

- Body slender, tail twice the body length; head with large and strongly keeled scales in adults and smooth in juveniles; dorsal scales sub equal, rhomboidal, smooth or feebly keeled and arranged in oblique series converging towards the vertebral line; 28-35 scales round the mid-body; males and females having 7-12 femoral pores.
- Dorsal body olive brown, darker on sides; a pair of light coloured lateral streak extends from the head to the edge of tail and another pair from the upper lip to the hind limb.

Habitat and ecology: Diurnal; terrestrial; lives in dry, rocky terrain, in degraded forest and open forest; mostly found near bushes. Very agile and fast moving, often disappear with slight disturbance; up to 7 eggs are laid in two clutches, in pre-monsoon and post-monsoon. Diet: small insects and spiders.

Distribution: Orissa: In Similipal found throughout the Sal forest patches; also found in Mayurbhanj, Keonjhar, Dhenkanal, Angul, Nayagarh and Boudh districts. Elsewhere in India: Rajasthan, Jammu & Kashmir, Punjab, Gujarat, Uttar Pradesh, Madhya Pradesh, Andhra Pradesh and Karnataka. Elsewhere outside: Pakistan.



Pratyush Mohapatra



Pratyush Mohapatra

White-Spotted Supple Skink

Length: 80mm

Riopa albopunctata (Gray, 1846)
Champeī sapa

Identification

- Body slim and slender; head slightly distinct from neck; tympanum round; scales smooth; limbs rudimentary.
- Dorsum uniform brown; each dorsal scale is marked with prominent dark spots; sides of the neck and anterior portion of the body dark brown, densely spotted with white dots; ventral portion off white.

Habitat and ecology: Diurnal and crepuscular in habit; mostly found on forest floor, below leaf litter, near bushes and dry leaves. Also found inside soft soil below rotten logs, boulders or near roots of bushes. Diet: insects like ants and termites; also feed on caterpillar in captivity.

Distribution: Orissa: Throughout Similipal Biosphere Reserve; also found throughout the state. Elsewhere in India: Uttar Pradesh, Bihar, West Bengal, Assam, Madhya Pradesh, Andhra Pradesh, Tamil Nadu and Kerala.



Common Snake Skink

Length: 80mm

Lygosoma punctatus (Gmelin, 1799)

Nali lanzia champei sapa

Identification

- Body slim and slender; very short legs and digits; lower eyelid with an undivided transparent disc.
- Dorsum uniform brown; tail pinkish red; each dorsal scale marked with prominent dark spot, forming 4-6 longitudinal line across the dorsal body; sides of the neck and anterior portion of the body dark brown, densely spotted with white dots; belly creamish white.

Habitat and ecology: Diurnal and crepuscular; found on forest floor, below leaf litter, logs, boulders. Also found near human habitation. Diet: insects like ants and termites; also feed on caterpillar in captivity. Sometimes they plough the loose soil in search of termites.

Distribution: Orissa: Throughout Similipal; also found in Dhenkanal, Khurda, Cuttack, Ganjam. Kalahandi and Rayagada districts. Elsewhere in India: Bihar, Tamil Nadu, Andhra Pradesh and Uttar Pradesh.



Beddome's Grass Skink

Length: 110mm

Eutropis beddomii (Jerdon, 1870)

Champeineula

Identification

- Body stout, dorso-ventrally flattened, dorsal scales with 3-5 feeble keels; ventral scales smooth; 30-32 scales round the body.
- Dorsum brown, with 4 dark brown longitudinal streaks; a pair of light or yellow lateral bands starts from the eye till base of the tail; a broad chocolate brown band on the top.

Habitat and ecology: Crepuscular; found in open Sal forest, near bushes, below rock boulders; prefers to stay near bushes, where it can escape at slightest disturbance. Diet: insects, grubs, butterflies, caterpillars etc.

Distribution: Orissa: One observation from Pithabata area of Similipal; also recorded from Keonjhar, Dhenkanal and Koraput districts. Elsewhere in India: Andhra Pradesh, Kerala and Tamil Nadu. Elsewhere outside: Sri Lanka.



Pratyush Mohapatra



M. V. Nair

Common Indian skink

Length: 180mm

Eutropis carinata (Schneider, 1801)
Champeineula

Identification

- Body robust, dorso-ventrally flattened, dorsal scales with 3-5 distinct keels, three median keels are strongly marked; ventral scales smooth; 30-34 scales round the body.
- Dorsum brown, olive or bronze brown in colour, uniform or with black dots; a pair of light or yellow lateral bands starts from the eye till the base of the tail; a broad chocolate brown band extends from the upper lip till the groin.

Habitat and ecology: One of the common skink; diurnal; terrestrial; found in dry forest, rain forest and near human dwellings, under leaf litter, rock boulders; mostly seen basking in open areas. 2-8 eggs are laid in self made holes during pre-monsoon and post monsoon seasons. Diet: insects, crickets, caterpillars, frogs and other small vertebrates.

Distribution: Orissa: Found throughout Similipal, also throughout the state. Elsewhere in India: Throughout except northwest (Specific records- Gujarat, Maharashtra, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, West Bengal, Bihar and Assam). Elsewhere outside: Sri Lanka, Myanmar, Bangladesh and Nepal.



Pratyush Mohapatra



M. V. Nair

Eastern Bronze Skink

Length: 150mm

Eutropis macularia (Blyth, 1853)
Champeineula**Identification**

- Body slender, cylindrical, dorsal scales with 5-8 keels, ventral scales smooth; 28-30 scales round the body.
- Dorsum deep brown, olive or bronze brown in colour; a pair of light or yellow dorso-lateral bands starts from above the eye till the base of the tail; sometimes with black spots on the posterior side of body. Juveniles shining bronze coloured, anterior part reddish brown. Breeding males have reddish orange flank and lateral side of the body.

Habitat and ecology: Diurnal; terrestrial; mostly seen on the forest floor; found in dry forest, rain forest and near human dwellings; under leaf litters, rock boulders. 2 eggs are laid under stones or leaf litter during pre-monsoon and post monsoon seasons. Diet: insects like crickets, caterpillars, and beetles

Distribution: Orissa: Throughout Similipal; also throughout the state (specifically in the forest areas). Elsewhere in India: Jharkhand, Chattishgarh, Bihar, Uttar Pradesh, Madhya Pradesh, West Bengal and Assam. Elsewhere outside: Pakistan, Myanmar, Thailand, Cambodia, Vietnam and the Malay Peninsula.



Limbless Skink

Length: 280mm

Sepsophis punctatus Beddome, 1870**Identification**

- Body slender, much elongated, cylindrical; snout conical, blunt; upper lip slightly extends the lower lip; a large rostral on the snout tip, clearly visible from the top; ear opening minute and partially covered by scales. Dorsal scales smooth; 20 scales round the mid-body. No external limbs; tail as long as the body length, spongy, cylindrical and blunt.
- Dorsum light brown, two series of black spots on the anterior half of the body, which continues as lines after the mid-body; tail is with four lines, splashed with black spots.

Habitat and ecology: Found in semi-evergreen patches; fossorial; immediately enters in to loose soil at slightest disturbance; found below rock boulders in loose and humus soil. Not much is known about the natural history and behavior of the species. Diet: termites and ants.

Distribution: Orissa: In Similipal reported from Barhakamuda area; also found in Khandadhar Hills of Sundargarh district. Elsewhere in India: Gorge Hills, Godavari valley, Andhra Pradesh.



Pratyush Mohapatra



Pratyush Mohapatra

Common Indian Monitor

Length: 2000mm

Varanus bengalensis (Daudin, 1802)

Matia godhi

Identification

- Body slender; snout elongated, nostrils open as an oblique slit, more close to the eye; neck elongated; tail long whip like and laterally compressed.
- Juveniles olive green or dark greyish with yellow bands in transverse series. Adults grey or brown in colour with light transverse bands on body and tail; head with light marking, belly yellowish or brownish.

Habitat and ecology: Diurnal; lives in scrub forest to evergreen forest. Mostly found in plantation area, near human habitation, in semi-arid area, inside caves, termite mounds, inside tree holes, cracks and crevices in large rock boulders etc. During winter days they are seen basking on road, on trees or on rocks. It can run very actively and swiftly when sense any danger. It has a very good grip, which enables to cling to its substratum very strongly. Nearly 35 oval, elongated eggs are laid in degraded termitarium during the month of November to December; incubation period more than 250 days; hatchlings measure approximately 9 cm in snout to vent length. Diet: wide range of prey and any kinds of meat it comes across. Juveniles feed on insects, frogs, crabs, fishes, lizards, snakes, dead animals, eggs and everything they get.

Distribution: Orissa: Throughout Similipal, also throughout the state. Elsewhere in India: Throughout. Elsewhere outside: Iran, Russia, Afghanistan, Pakistan, Nepal, Myanmar, Bangladesh and Sri Lanka.



Yellow Monitor Lizard**Length: 1500mm***Varanus flavescens* (Hardwicke and Gray, 1827)*Sorisia godhi***Identification**

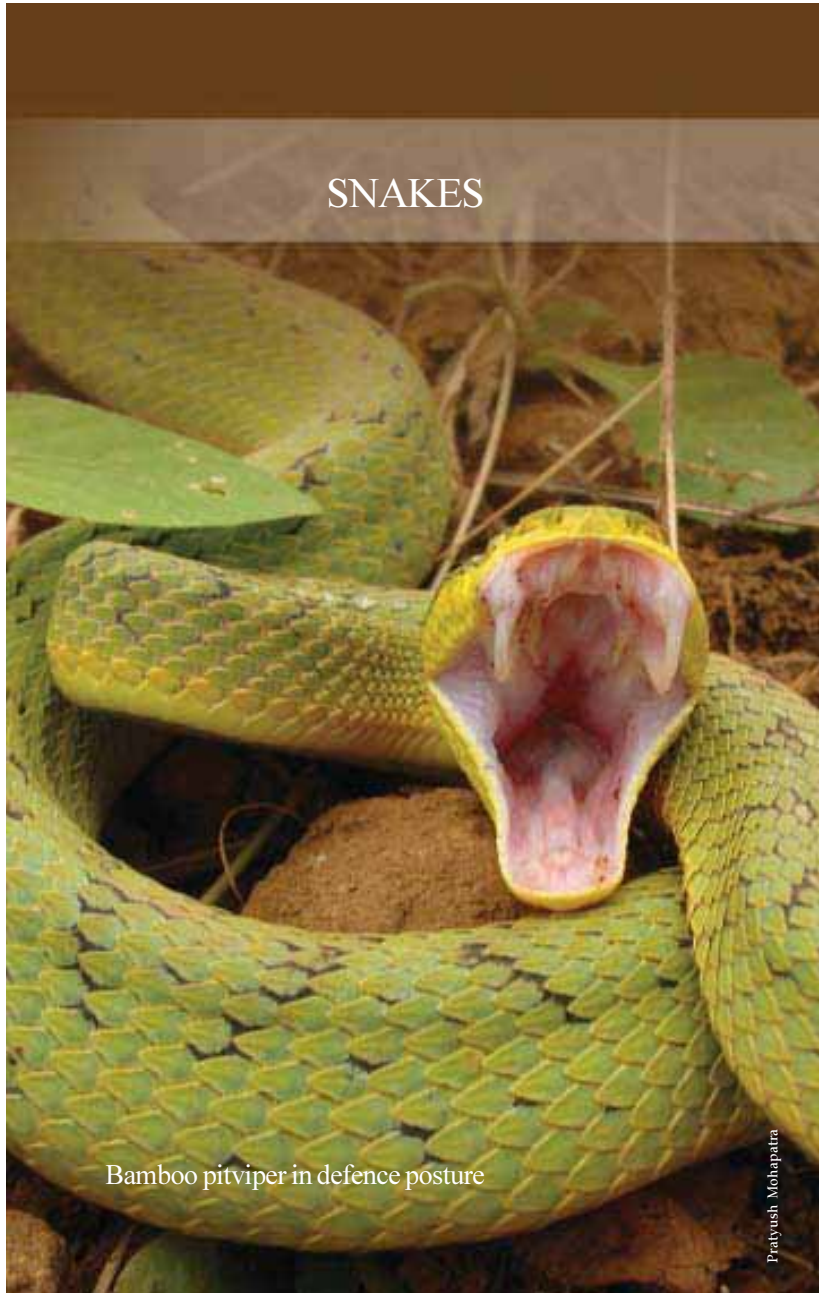
- A medium sided monitor lizard; growing up to 1.5m in length. Snout short and convex, neck shorter and thicker, nuchal scales strongly keeled.
- Body colour yellow with reddish brown reticulations.

Habitat and ecology: Diurnal; mostly found in agricultural fields, plantation area, near human habitation, in semi-arid area, inside termite mound, tree holes, cracks and crevices in large rock boulders etc. Nearly 30 oval, elongated eggs are laid inside degraded termitarium during the month of November to December; hatchlings measure approximately 8 cm in snout to vent length. Diet: insects, frogs, crabs, fishes, lizards, snakes, birds, dead animals, eggs etc.

Distribution: Orissa: Sighted in the fringe areas of Similipal; also common in Mayurbhanj, Keonjhar, Balasore, Jajpur, Dhenkanal, Puri, Khurda, Dhenkanal and Angul districts. Elsewhere in India: West Bengal, Assam, Bihar, Punjab and Uttar Pradesh. Elsewhere outside: Nepal, Pakistan.



SNAKES



Bamboo pitviper in defence posture

Pratyush Mohapatra

99

John's sand boa

Length: 1000mm

Eryx johnii (Russell, 1801)
Domundia Sapa

Identification

- Body cylindrical, robust; tail very small and blunt; neck indistinct; upper lip protrudes beyond the lower jaw; nostrils small and slit like; eyes small with vertical pupil; a pair of tiny spurs present on each side of the vent.
- Dorsum reddish brown, yellowish or greyish, sometimes with indistinct asymmetric cross bars, more prominent towards the posterior part of the body; ventral uniform yellowish, buff, greyish brown or dark brown.

Habitat and ecology: Nocturnal; lives inside loose soil, found in drier areas, inside rat holes and sometimes in gardens and agricultural fields; usually non-offensive. Diet: mice, rats, other small mammals, reptiles and small birds.

Distribution: Orissa: In Similipal found near Bangiriposi, also reported from Keonjhar, Sambalpur and Cuttack districts. Elsewhere in India: Throughout Peninsular India. Elsewhere outside: Pakistan.



Pratyush Mohapatra

100

Common Sand Boa

Length: 1100mm

Gongylophis conicus (Schneider, 1801)

Boda sapa

Identification

- Body stout; scales keeled, very strongly upon the head and tail; tail short and pointed in juveniles and relatively blunt in adults; head slightly distinct from the body, moderately elongated; snout protrudes beyond lower lip; nostrils slit like; eyes small with vertical pupil.
- Body colour variable, many colour morphs were observed. Dorsal reddish brown or earthy brown or dark brown or yellowish brown with grayish head; light brown and dark brown irregular blotches on dorsal and dorso-lateral sides; lower parts yellowish or whitish; outer scale-rows with small brown spots.

Habitat and ecology: Nocturnal, but often remains with its head out from the burrow during day time; mostly found in drier regions; individuals live below rocks, rat holes in houses and also in degraded termite mounds. Breeding throughout the year; breeding females measure more than 650mm. Diet: mostly rodents and kills the prey by constricting (strangulation) and then swallowing head first; also feeds on lizards and sometimes birds.

Distribution: Orissa: Throughout Similipal, specific sightings near Meghasani, Lulung, Chala and Bhanjabasa area; also found throughout Orissa. Elsewhere in India: Throughout (except northeast India). Elsewhere outside: Sri Lanka, Pakistan and Bangladesh.



Indian rock python

Length: 7500mm

Python molurus (Linnaeus, 1758)

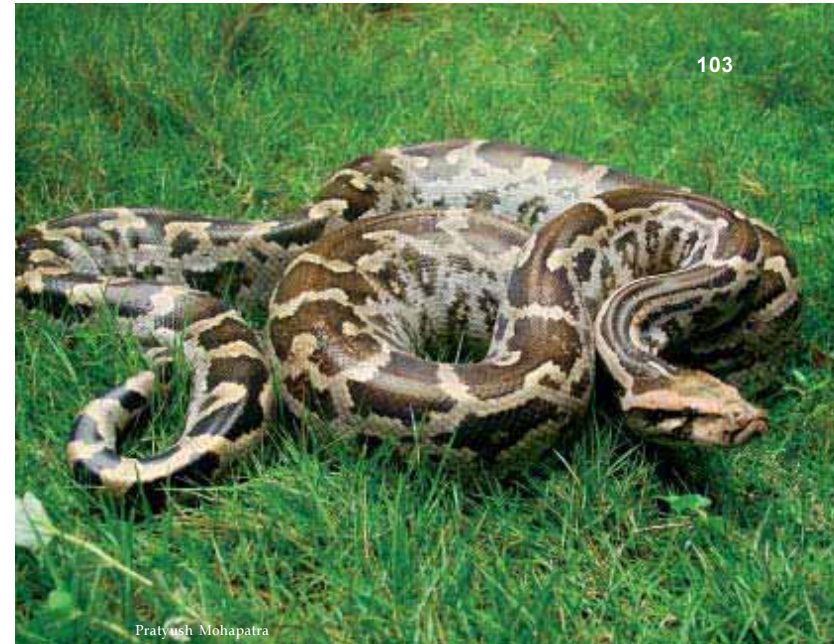
Ajagara sapa

Identification

- Very large snake; body stout and robust; head lance shaped, slightly distinct neck; tail very short in comparison to the body (nearly 1/8); body smooth and glossy, iridescent. Sensory pits located on rostrum, at the first two supra labials and some of the anterior and posterior infra labials. A pair of small spurs (rudimentary hind legs) present at both sides of the vent.
- Iridescent brownish grey above with a dorsal series of large, elongate, more or less sub-quadrangular or irregular dark grey, brown or reddish brown black-edged spots; a lance-shaped pinkish or reddish mark on top of the head extending on to the neck; a dark streak on the side of the head, broadening behind the eye and extending past the angle of the mouth.

Habitat and ecology: Mostly nocturnal; inhabitant of forest but can take shelter near rivers and jheels; climbs well and is capable of suspending itself from branches by means of its prehensile tail. Juveniles are more timid than adults. The Indian python is oviparous, clutch of more than 50 eggs are laid. Diet: mammals, birds and reptiles indiscriminately. It seems to prefer mammals of relatively larger proportions.

Distribution: Orissa: Commonly seen towards south Similipal, also throughout the state (specifically in the forest areas). Elsewhere in India: Throughout. Elsewhere outside: Pakistan, Nepal, Bangladesh, Hong Kong, China and Sri Lanka.



Pratyush Mohapatra



Pratyush Mohapatra

Common Vine Snake

Length: 2000mm

Ahaetulla nasutus (Andersson, 1898)

Laudankia sapa

Identification

- Body long and slender; snout ends with a pointed dermal appendage, with a median groove on the upper side; eyes large and elliptical, horizontally lobed “key hole” type pupil.
- Body colour bright green or bluish green; interstitial skin black and white, when excited it displays typical oblique black and white line at the anterior side. Tongue pinkish, powdered with brown spots. A distinct yellow or white line passes transversely from behind the throat to 2/3rd of the tail; ventral side off-white or green or bluish.

Habitat and ecology: Diurnal; arboreal; lives on trees and bushes; occasionally comes down to ground while moving from one tree to another. When threatened it opens the mouth showing the tongue and inflate the anterior part of the body to display the black and white checkered pattern of the interstitial skin. Breeding during March-May; ovo-viviparus; babies are seen during monsoon season. Diet: chiefly lizards, small rodents and birds, but it has been known to eat snakes.

Distribution: Orissa: Found throughout Similipal, also throughout the state. Elsewhere in India: Throughout the Peninsula; Rajasthan in Northwest and Assam in Northeast. Elsewhere outside: Myanmar, Thailand, Kampuchea and Sri Lanka.

Remark: Apart from the typical form, another variety (*A. nasuta isabellinus*) of brown or Khaki colour with black dots on the head and reddish brown belly is found in Orissa.



Buff striped keelback

Length: 800mm

Amphiesma stolata (Linnaeus, 1758)

Mati birala; Mati biradi

Identification

- Body cylindrical; neck slightly distinct; tail pointed; eyes large; body scales keeled.
- Olive greenish or brownish above with black spots or reticulated cross-bars, intersected by two dorso-lateral yellow or buff stripes; on the hinder part of the body the stripes are best marked and the black spots least evident, lower part whitish, sometimes with a small black spot on the side of each ventral shield; in juveniles the light dorso-lateral stripes are replaced in the forepart of the body by a series of spots.

Habitat and ecology: Diurnal; terrestrial; very common during early monsoon. Mass breeding observed during April-May. Found in drier regions, in plains to an altitude of 1600m. Individuals seen hibernating below rocks during winter months. Eggs are deposited during monsoon season in a coherent clutch of 5-17 numbers below rocks or heap of stones; the length of each eggs being 2-3cm. Diet: frogs and lizards.

Distribution: Orissa: Common throughout Similipal, also throughout the state. Elsewhere in India: Throughout. Elsewhere outside: Bangladesh, Pakistan, Sri Lanka, Taiwan, China, Myanmar, Thailand; Vietnam, Laos, Kampuchea and Nepal.



Pratyush Mohapatra



Pratyush Mohapatra

Banded Racer

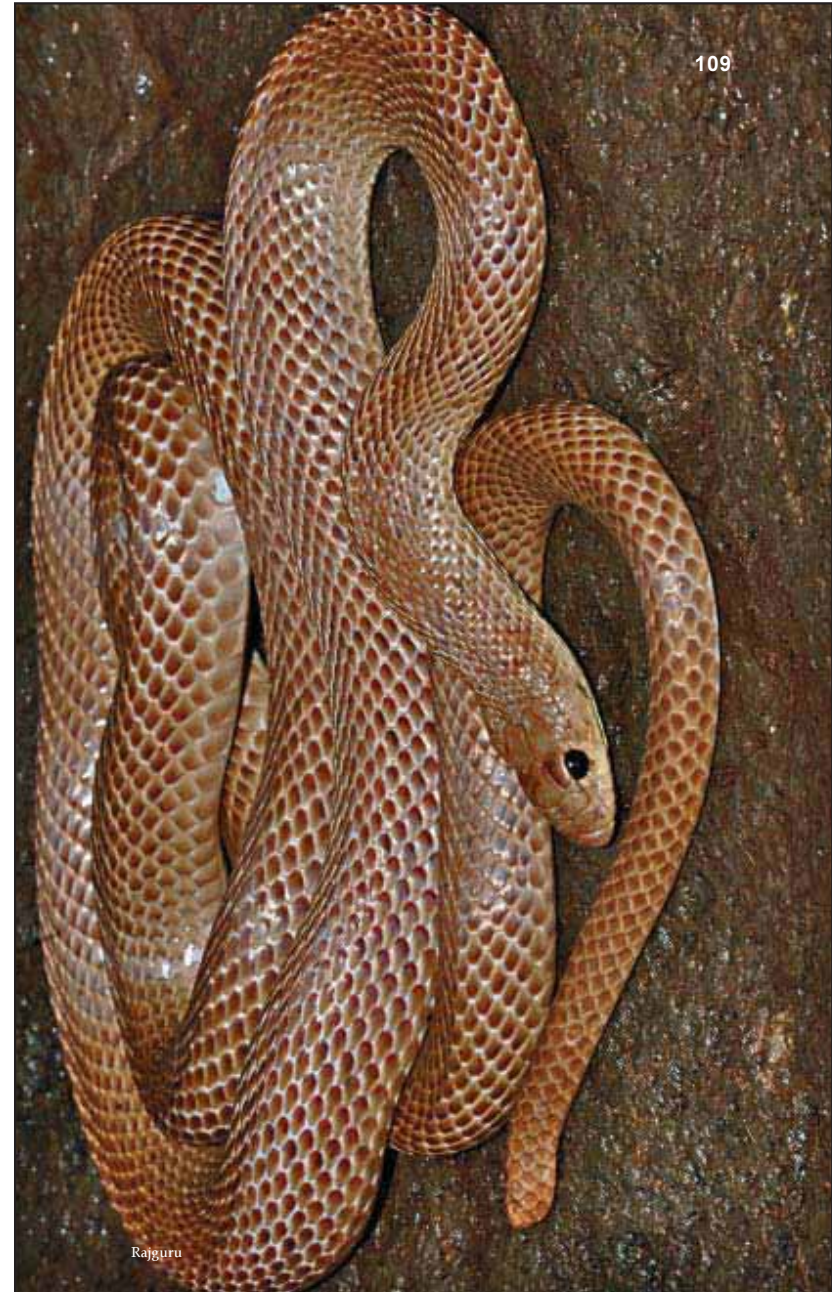
Length: 1200mm

Argyrogena fasciolatus (Shaw, 1802)**Identification**

- Body slender, with protruding snout beyond lower jaw; scales smooth; neck slightly distinct.
- Young ones light or dark olive brown above, beautifully ornamented with cross bars on the anterior half of the body, formed by a pattern of white and dark brown or black; posterior part of body with indistinct dark cross-bars or spots, these markings gradually disappearing towards the tail; head marbled with light and dark olive, with two white spots on each side of the interparietal suture. Adults without the cross bars; usually uniform brown in colour; lower parts whitish or yellowish.

Habitat and ecology: Diurnal; terrestrial; found in agricultural fields, near human habitation; frequently climbs trees. When molested it erects itself and flattens the neck like a cobra, for which the snake is sometimes mistaken as cobra. Diet: birds, rats and other small mammals.

Distribution: Orissa: In Similipal one road killed specimen was found near Pithabata; also recorded from Khurda district. Elsewhere in India: Peninsular India, except the northwest; specific records: Andhra Pradesh, Gujarat, Maharashtra, Madhya Pradesh and Chattishgarh. Elsewhere outside: Pakistan, Bangladesh and Nepal.



Olive Keelback water snake

Length: 1000mm

Atretium schistosum (Daudin, 1861)

Sabuja dhanda

Identification

- Body cylindrical; head slightly distinct from neck; eye with round pupil; nostril slit like and valvular, directed upward; nasal scale not completely divided; a single internasal; scales keeled on the body; ventrals rounded and subcaudals paired.
- Olive brown or greenish above; uniform or with two series of small black spots along the back; a more or less distinct dark lateral streak sometimes present; upper lip, outer row of scales and lower surfaces yellow.

Habitat and ecology: Crepuscular; inhabits plains and plateaus up to 3000 feet altitude; inoffensive in disposition; seldom found in the water and at times ascends low bushes. When alarmed, the forepart of the body is raised and the neck flattened; 12 to 30 eggs are laid at a time. Females with developing eggs were observed during winter. Diet: frogs and fishes.

Distribution: Orissa: In Similipal found near Jashipur, Bangriposi and Pithabata; also found in Ganjam, Puri, Khurda; Cuttack, Kendrapara and Dhenkanal districts. Elsewhere in India: Peninsular India; specifically Kerala, Madhya Pradesh, Karnataka, Uttar Pradesh. Elsewhere outside: Bangladesh, Nepal and Sri Lanka.



Forsten's Cat Snake

Length: 2000mm

Boiga forsteni (Dumeril, Bibron & Dumeril, 1854)

Katakatiya naga

Identification

- A fairly long and slender snake; head triangular in shape, neck distinct; eyes slightly elliptical with vertical pupil; vertebral scale rows enlarged; ventral scales with a pair of lateral keels.
- Body colour grey or reddish brown with distinct black and white alternating irregular transverse markings throughout the dorsum; a black mark runs from neck and reaches up to the frontal; black postocular stripe runs behind the eye till the angle of the jaw and further behind the neck. A series of small black spots may present on the two sides of ventrals, or in some cases the black spots are scattered.

Habitat and ecology: Nocturnal; arboreal; mostly lives in woodland forest in dry deciduous forest, moist deciduous and peninsular Sal forest; in holes of Mahua tree, Mango tree and sometimes found in holes in any large tree near forest fringe villages. The snake displays threatening posture by raising the fore body and hissing loudly. Diet: lizards, birds and small mammals.

Distribution: Orissa: Throughout Simlipal Biosphere Reserve; also found in Mayurbhanj, Nuapara, Khurda, Angul, Sambalpur, Dhenkanal, Kalahandi and Rayagada districts. Elsewhere in India: Throughout Peninsular India, in West Bengal, Bihar, Jharkhand, Chhattisgarh, Madhya Pradesh and Uttarakhand. Elsewhere outside: Sri Lanka.



M. V. Nair



Pratyush Mohapatra

Common Indian Cat Snake

Length: 1000mm

Boiga trigonata (Schneider In: Bechstein, 1802)

Pahadia chitti sapa

Identification

- A slender snake, head very much distinct from the neck; eyes large with vertical pupil.
- Body colour light yellow or greyish brown; uniform, or speckled with dark markings, and with a vertebral series of large, light, black-edged, angular or "V" shaped or "Y" shaped spots, which may be connected to one another at the vertebral line. Lower part yellowish, uniform or with small black spots on outer margins of the ventrals; head brownish with a light, black edged, inverted "Y" shaped mark; a light stripe runs above the eye to the angle of the jaw.

Habitat and ecology: Nocturnal; terrestrial; found on bushes, bellow rocks and also on Palm, Date Palm or Banyan trees. It is a fearless snake, sometimes found near human habitation. It displays threatening posture by raising the fore body into many folds and repeatedly vibrating the tail. Females are much larger than males; 3 to 11 eggs are laid on ground below rocks or holes; babies when born measure 237-260 mm in length; babies hatch out during August-September. Diet: lizards, geckos and small mammals.

Distribution: Orissa: Found in the open scrub forest of Similipal; also throughout the state. Elsewhere in India: Peninsular India. Elsewhere outside: Pakistan, Nepal, Sikkim, Bangladesh and Sri Lanka.



Ornate Flying Snake

Length: 1500mm

Chrysopelea ornata (Shaw, 1802)

Udanta sapa

Identification

- A long and slender snake with elongated head; neck distinct; snout much depressed, broadly truncated; eyes large with round pupil; prominent lateral keels on the ventrals.
- Colour very variable, greenish yellow back with a series of large orange or red vertebral spots alternate with black bands; head black with yellow bars and sometimes spots; belly lemon yellow.

Habitat and ecology: Diurnal; found in deciduous forest, sometimes found near human habitations. It has remarkable climbing capacity and tremendous power of gliding short distances by springing the body. The females lay 6 to 12 elongate eggs in tree holes or in suitable shady places in crevices of ruined buildings. Diet: lizards, mainly geckos, small mammals, birds, snakes and even insects have been recorded as part of its diet.

Distribution: Orissa: Found throughout Similipal Biosphere Reserve; also found in Keonjhar, Dhenkanal and Khurdha districts. Elsewhere in India: Maharashtra, Gujarat, Madhya Pradesh, Chattishgarh, West Bengal, Bihar, Jharkhand, Assam and Tripura. Elsewhere outside: Bangladesh.



Pratyush Mohapatra



M. V. Nayar

Common Indian trinket snake

Length: 1650mm

Coelognathus helena helena (Daudin, 1803)

Donger chiti / Pahadia chiti

Identification

- Head narrow and elongated; neck slightly distinct; pupil round or horizontally elliptical; ventral scales with weakly developed keels.
- Dorsum brownish with reticulated pattern of dark brown or black markings containing white ocelli. The patterns are most conspicuous towards anterior side and gradually disappears on the hinder part of the body and transformed to two dark lateral stripes; behind the head there are two short narrow black lines on the lateral sides extending beyond the neck; a black vertical streak runs below the eye and an oblique one behind it, which crosses the supralabials behind eye; belly pure white.

Habitat and ecology: Nocturnal or crepuscular; frequents near bushes in open field, degraded forest, also found near human habitation. Display a typical threatening posture with raised fore body, folded into many loops. Found inside rat holes, degraded termite mounds and among bushes. It can climb well on bushes. Diet: rodents, sometimes toads and birds.

Distribution: Orissa: Throughout Similipal and also throughout the state. Elsewhere in India: Throughout India. Elsewhere outside: Bangladesh, Nepal, Pakistan and Sri Lanka.



Copper-Headed Trinket Snake

Length: 2100mm

Coelognathus radiata (Schlegel, 1837)

Pahadia chiti

Identification

- Body long, neck slightly distinct; dorsal scales with weakly developed keels.
- Dorsum greyish brown, fawn or yellowish brown, sometimes with a reddish or greenish tinge in life; four black stripes run on the anterior half or up to two-third of the body, commencing a short distance behind the neck; lower parts yellowish, uniform, or powdered with grey, or almost entirely grey; head copper brown; a black bar across the occiput and three black streaks radiating from below and behind the eye.

Habitat and ecology: Crepuscular; found in plains, dry deciduous forests, scrub forests, open fields and gardens in the vicinity of villages. When cornered it adopts a menacing attitude, throwing the forepart of its body into a series of loops and opening the mouth widely. 5 to 12 eggs are laid at a time. Diet: small mammals and birds.

Distribution: Orissa: Sighted near Lulung, Thakurmunda and Bangiriposi area; also found in Cuttack, Nayagarh, Keonjhar, Kalahandi and Rayagada districts. Elsewhere in India: Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chattisgarh, Bihar, Jharkhand, West Bengal, Assam, Meghalaya, Arunachal Pradesh, Manipur, Mizoram and Nagaland. Elsewhere outside: Bangladesh, Nepal, Myanmar, Cambodia, People's Republic of China, Laos, West Malaysia and Sarawak, Singapore, Thailand, Vietnam and Indonesia.



M. V. Nair

Common Indian Bronze-Back

Length: 1200mm

Dendrelaphis tristis (Daudin, 1803)

Kanala; Kauchia

Identification

- An elegant and fairly long snake; head distinct from the slender neck and elongate; eyes large with round pupil; tail long, prehensile and nearly one-third of the total length; vertebral scales narrowly enlarged and longer than broad; ventral keel on the either side of the belly.
- Bronze-brown or purplish brown above; belly light greyish or yellowish; a more or less distinct buff or grey stripe along the outer two scale rows, edged or spotted with black; a pair of indistinct black temporal stripes extend to the neck; vertebral scales on neck and fore body sometimes yellow.

Habitat and ecology: Diurnal; arboreal; very active and fast moving during day time. Fearless and timid in disposition and does not bite readily when handled. It can ascend a bare tree trunk at great speed and disappear in branches. Diet: lizards, geckos, small mammals, birds and tree frogs.

Distribution: Orissa: Common throughout Similipal; also throughout the state. Elsewhere in India: Throughout Peninsular India, upto Punjab in northwest and West Bengal in the northeast. Elsewhere outside: Pakistan, Nepal and Sri Lanka.



Pratyush Mohapatra



M. F. Ahmed

Smooth Water Snake

Length: 900mm

Enhydryis enhydryis (Schneider, 1799)

Jal ganthia

Identification

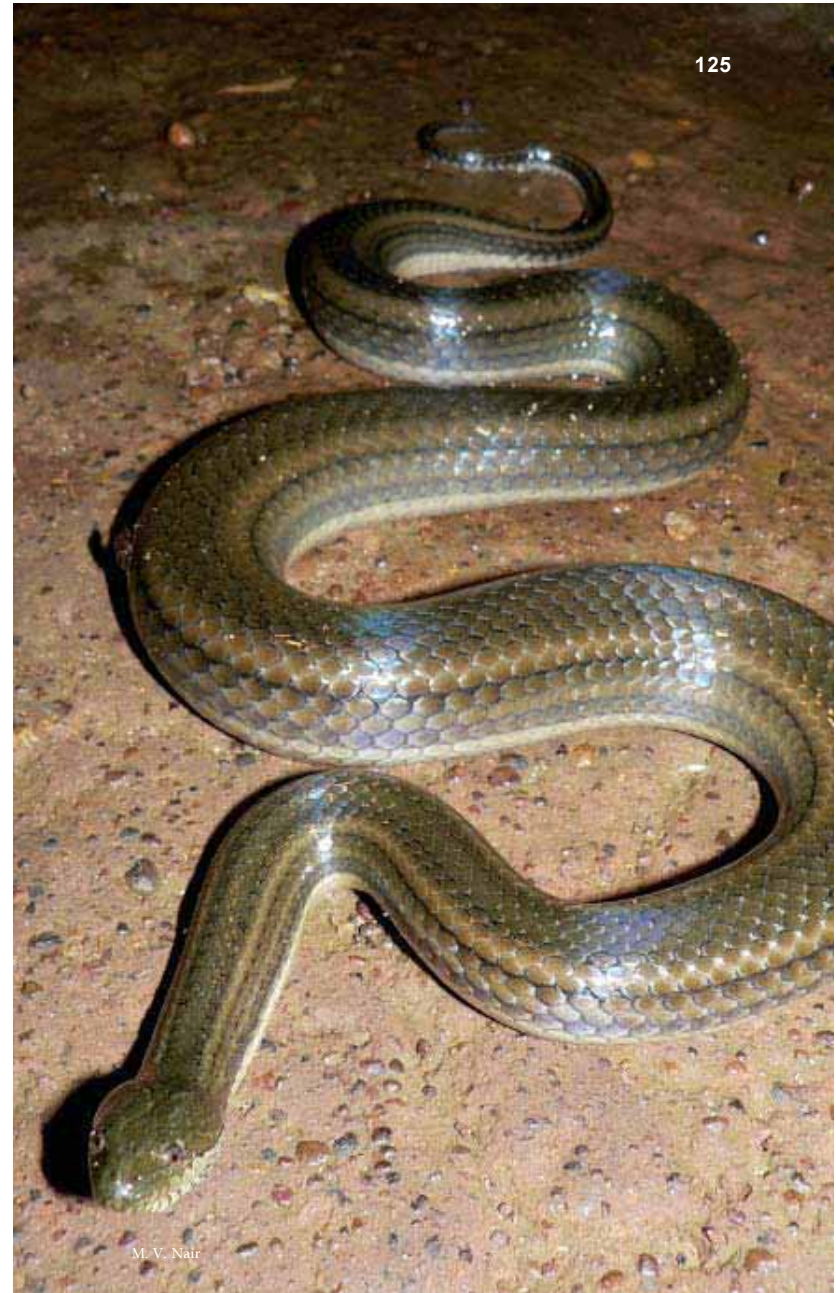
- Body stout and robust; tail small and pointed; snout broadly rounded with slightly distinct head.
- Dorsum olive brown or grey, with or without a pair of lateral stripes; belly scales yellowish white with brown outer edge; lip scales whitish. Young ones are darker in colour.

Habitat and ecology: Aquatic; active during day and night; found near freshwater, brackish water and also in low land agricultural fields. Commonly found resting inside water during day time with the head projecting outside. This species is ovo-viviparus and gives birth to 5-16 live young ones of 150mm in size. Diet: fishes of different species, frogs and tadpoles.

Distribution: Orissa: Jashipur and Lulung area; found in Ganjam, Khurda, Cuttack, Jagatsinghpur, Kendrapara, Balasore, Mayurbhanj, Jajpur, Dhenkanal, Nayagarh and Phulbani districts. Elsewhere in India: Central and Eastern region. Elsewhere outside: Bangladesh, Myanmar, Thailand, Kampuchea, Laos, Vietnam, southern China, western Malaysia, Indonesia and Sri Lanka.



Pratyush Mohapatra



M. V. Nair

126

Common Wolf Snake

Length: 900mm

Lycodon aulicus (Linnaeus, 1754)

Kaudia chiti sapa

Identification

- Body slender with pointed tail; head flattened; neck distinct from the body; snout more or less spatulated, upper lip projecting beyond the lower jaw.
- Brown or greyish brown above, with 12-19 white cross bars which expand or bifurcate laterally, enclosing triangular patches; the bars may be pure white or heavily speckled with brown; a pair of triangular whitish or yellowish blotchs on each side of the occiput; upper lip white or spotted with brown.

Habitat and ecology: Nocturnal; one of the common and most widely distributed of all the Wolf snake species in India; lives in all kinds of forests, below rock boulders, in caves, in tree holes etc. The snake often enters and lives in and around human habitations to prey chiefly on house lizards. Many times, the snakes were found living in the cracks or crevices in the house. The prey is caught from behind the neck and slowly swallowed even in live condition. Because of its tremendous climbing ability it can also overcome rough vertical surface. Diet: geckos, skinks, frogs and occasionally mice.

Distribution: Orissa: Found throughout Similipal and also throughout the state. Elsewhere in India: Peninsular India, up to Assam in the northeast. Elsewhere outside: Pakistan, Nepal, Myanmar and Sri Lanka.



Pratyush Mohapatra

127



M. V. Nair



Pratyush Mohapatra

128

Twin-spotted wolf snake

Length: 650mm

Lycodon jara (Shaw, 1802)

Identification

- Body slender; snout flat, not projecting beyond the lower jaw; head slightly distinct; scales smooth, tail short and pointed.
- Greenish, brownish or purplish black above, spotted all over with yellow small spots, two on each scale; upper lip and lower surface uniform white; a white or yellow collar always present in the young.

Habitat and ecology: Nocturnal; lives in open fields, shrub forest and grass land. This species is not aggressive like Common wolf snake and never attempt to bite even in first handling. 2-8 eggs are laid during August-September. Diet: geckos and other small lizards.

Distribution: Orissa: Sighted near Barhakamuda, Jashipur and Chahala; also found in Balasore, Cuttack, Khurdha, Nayagarh and Ganjam districts. Elsewhere in India: Eastern Himalayas, Northeastern India, Uttar Pradesh, Uttaranchal and Assam. Elsewhere outside: Bangladesh and Nepal.



Pratyush Mohapatra

129



Pratyush Mohapatra



Pratyush Mohapatra

Barred Wolf Snake

Length: 650mm

Lycodon striatus (Shaw, 1802)

Kaudia chiti

Identification

- Snout projecting beyond the lower jaw; neck slightly distinct; tail short and tapering.
- Dark brown or blackish above with white cross-bars expanding laterally and dorsally; on the anterior side of the body the expansions enclose triangular spots; on the posterior part the bars are narrower and closer; a white bar on the nape present or absent; upper lips and lower parts uniform white.

Habitat and ecology: Nocturnal, lives in scrub forest, below rock boulders, rotten logs and near human habitation in the cracks on walls, in gardens and in agricultural fields. Found in plains and in hills up to 2000 feet altitude. Timid in disposition; makes no endeavor to escape but coils itself, if touched or teased and hides the head beneath its coiled body; 2-6 eggs are laid of size 25mm x 7mm during July-August. Diet: geckos, other lizards and probably frogs.

Distribution: Orissa: Common in Similipal; also found throughout the state. Elsewhere in India: Throughout except Northeast India. Elsewhere outside: Pakistan, Nepal, Sri Lanka, Uzbekistan, Tajikistan, Turkmenia and North & northeast Iran.



Indian Green Keelback

Length: 950mm

Macropisthodon plumbicolor (Cantor, 1839)
Sabuja dhanda

Identification

- Body stout; head distinct; scales on body strongly keeled, those on upper surface of head smooth, large and variable in size; eyes large with round pupil.
- Bright or dull green overall, sometimes with faint irregular black cross lines; belly grayish or glossy white. Young snakes have a bright yellow (rarely orange) 'Λ' shaped mark on neck, bordered on both sides by a dark bluish black area; a black stripe from eye to angle of mouth. Transverse markings on the body are often reduced or absent in adults.

Habitat and ecology: Nocturnal or crepuscular; found in dry deciduous forest, in grass land, also in gardens in towns and cities. Clutches of 8-14 eggs that hatch in August - September. Usually inoffensive disposition; when frightened may flatten the neck like cobra or flatten whole body on the ground revealing blue or white inter-scale coloration. Diet: prefer toads, frogs and rodents.

Distribution: Orissa: In Similipal specific sightings in Bangiriposi, Meghasani and Pithabata area; also recorded from Keonjhar, Dhenkanal, Khurdha, Gajapati, Rayagada, Kalahandi and Koraput districts. Elsewhere in India: Throughout the Peninsular India. Elsewhere outside: Pakistan and Sri Lanka.



Pratyush Mohapatra



M. V. Nair

Common Kukri Snake

Length: 850mm

Oligodon arnensis (Shaw, 1802)

Matia hara sapa

Identification

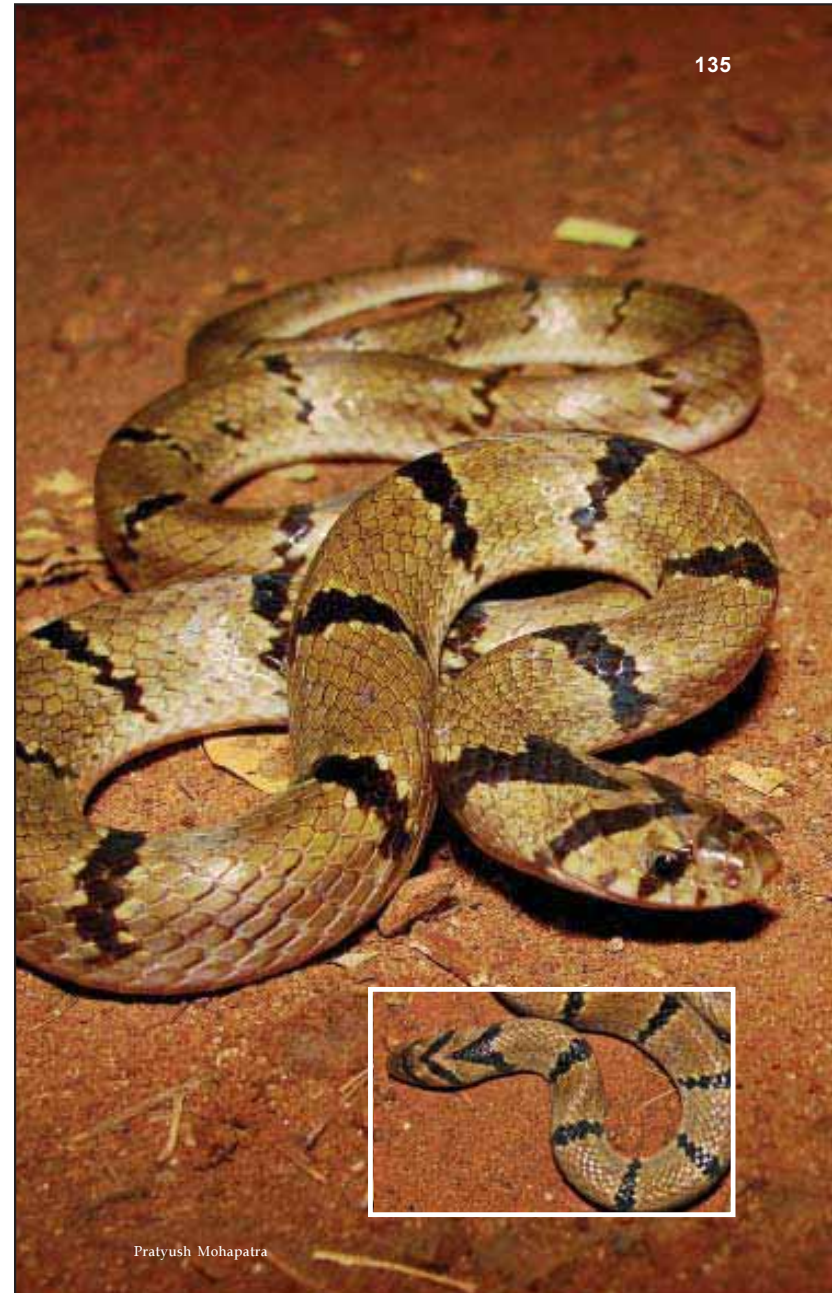
- A medium sized snake, body cylindrical, tail short and pointed; rostral broad and enlarged, visible from top of the head.
- Light or dark brown above with well-defined black cross bars or transversely arranged spots; the bands are often edged with white markings; whitish below, uniform or with indistinct lateral spots; head and neck with two black inverted 'V' shaped markings; a black band on the inter ocular region.

Habitat and ecology: Nocturnal; terrestrial, common in plains but also found in hilly areas; agile, active, easily alarmed and quick to conceal itself. This snake is active mostly during evening hours, very often seen in open grass lands, parks and also near human habitations. It can inflate its body to a remarkable degree when excited. Diet: lizards, frogs and other reptile eggs.

Distribution: Orissa: throughout the dry area of Similipal; also found throughout the state. Elsewhere in India: Peninsular India up to Himachal Pradesh. Elsewhere outside: Pakistan, Nepal and Sri Lanka.



Pratyush Mohapatra



Pratyush Mohapatra

Mock Viper

Length: 650mm

Psammodynastes pulverulentus (Boie, 1827)**Identification**

- Snout short, truncated, slightly turned up in the adult; neck distinct; rostral a little broader than high; pupil vertically elliptical; tail short and pointed.
- Body colour variable; light or dark brown with reddish, grayish or yellowish ting; head with dark symmetrical streaks; lower parts thickly powdered with brown or grey.

Habitat and ecology: Diurnal; terrestrial; often climbs on bushes; found in moist deciduous, evergreen forest, forest edges, agricultural fields and plantations. Plucky and vicious, strikes repeatedly if disturbed. The young are born alive (ovo-viviparus), 3 to 10 babies are produced at a time. Diet: frogs and lizards.

Distribution: Orissa: Two records from Jenabil; also found in Mahendragiri. Elsewhere in India: Eastern Himalayan region (North Bengal and Sikkim) and Northeast India (Assam and Meghalaya), recent record from Mahendragiri of Andhra Pradesh and Orissa border. Elsewhere outside: Bangladesh, Nepal, Myanmar, Thailand, Laos, Cambodia, Vietnam, Western Malaysia, Southern China, Philippines and Indonesia.



Pratyush Mohapatra



M. V. Nair

Common Indian Rat Snake

Length: 3000mm

Ptyas mucosus (Linnaeus, 1758)

Dhamana sapa

Identification

- A fairly long snake; head distinct from the body, elongated; eyes large.
- Olive green, brown, yellowish or greyish above with irregular but strongly marked black cross-bars on the posterior half of the body; yellowish- white below, the posterior ventrals (sometimes all the ventrals) and subcaudals edged with black; lips and throat whitish, the scales edged with black. The young when born are pale olivaceous, with more or less distinct light, dark-edged crossbars on the anterior part of the body.

Habitat and ecology: Diurnal; mainly an inhabitant of the plains, frequenting the open country, often in the vicinity of human habitations. It is a good climber, and is often found in trees at considerable heights. Timid and excitable in disposition, but when cornered can put up a good fight, raising the fore body and throwing it into one or more curves, at the same time inflating the throat. Diet: toads, lizards of all kinds, snakes, small mammals like rats, birds and their eggs. In trees it captures birds and their young.

Distribution: Orissa: Common throughout. Elsewhere in India: Throughout. Elsewhere outside: Pakistan, Nepal, Bangladesh, Myanmar, Thailand, Vietnam, Kampuchea, Laos, Taiwan, western Malaysia, China, Sri Lanka, Iran and Afghanistan.



M. V. Nair



M. V. Nair

Cantor's Black-Headed Snake

Length: 180mm

Sibynophis sagittarius (Cantor, 1839)

Dhulia naga

Identification

- A small and slender snake; head blunt and rounded; neck slightly distinct; eyes small and pupil rounded; tail short and prehensile.
- Body colour light brown with a series of black dots on mid dorsal line; head and nape dark brown or black; lips yellow with a yellowish brown border extending to the nape; lower part of the head with numerous blackish spots on ventral shield; the lateral side of the body has a series of brown lines, ventral scales below nape have a pair of black dots on each extremity till vent.

Habitat and ecology: Diurnal; terrestrial; lives below rocks and rotten logs, leaf litter and termite hills in plain land, foot hills and hillocks of altitude 60m-120m; timid in disposition; tail prehensile. Diet: blind snakes.

Distribution: Orissa: Found in the lowlands of Similipal; also found in Keonjhar, Dhenkanal, Nayagarh, Ganjam, Sambalpur, Kalahandi and Rayagada districts. Elsewhere in India: Sub Himalayan ranges.



Pratyush Mohapatra



Pratyush Mohapatra



Pratyush Mohapatra

Checkered Keelback Water Snake Length: 1200mm

Xenochrophis piscator (Schneider, 1799)

Pani dhanda; Dhanda sapa

Identification

- A medium sized snake, with cylindrical body, body rather stout; head flattened, neck slightly distinct; eyes with round pupil; nostrils directed slightly upwards; frontal constricted in the middle, twice as long as broad; internasals much narrowed anteriorly, as long, or nearly as long as the pre-frontals.
- Yellowish or olivaceous above, with 5-6 alternating rows of black spots quincuncially arranged; belly uniform whitish or yellowish; head olive brown above, with two oblique black streaks, one below and the other behind the eye. Juvenile brown or olivaceous with less prominent checkered pattern.

Habitat and ecology: Active during day and night; lives in plains and hills at low altitudes; semi-aquatic, found in all varieties of habitat such as ponds, pools, rivers, lake, paddy field and swampy areas. Extremely active in its movements; it bites fiercely when caught; other anti predator behaviour like rolling body, breaking of tail etc. are observed. Breed throughout the year, number of eggs laid is 8-87. Diet: frogs, fishes (live and dead) etc.

Distribution: Orissa: Throughout the water logged area of Similipal; also throughout the state. Elsewhere in India: Throughout. Elsewhere outside: Pakistan, Nepal, Bangladesh, Myanmar, Thailand, southern China, Laos, Kampuchea, Vietnam, western Malaysia and Sri Lanka.



Common Indian Krait

Length: 1500mm

Bungarus caeruleus (Schneider, 1801)

Chiti sapa

Identification

- Head round, slightly distinct from neck; vertebral scale row enlarged, hexagonal; subcaudals single.
- Black or iridescent black above with narrow white crossbars, usually arranged more or less distinctly in pairs; the bars on the anterior part of the body may be entirely absent, sometimes mid-dorsal white spots are arranged on the anterior part of the body; on the sides of the body the bars may or may not widen; a white preocular spot usually present; upper lip and lower parts white; tongue pinkish with white tip.

Habitat and ecology: Nocturnal; found in a wide range of habitat; frequents near water sources like near hill streams, ponds, rivers, dams; also in old houses inside rodent burrows, degraded termite mounds, in agricultural fields, gardens, plantation areas. This is one of the most inoffensive snakes in disposition and often hides the head when disturbed. The kraits produce short hiss when disturbed. They live in plains as well as in hills up to 1700m. Diet: basically a snake eater, feeds on Wolf snakes, Kukri snakes, Sand boa, Blind snakes, Trinket snakes, Checkered keel backs and probably all other species, which it can overpower. Sometimes they feed on frogs, lizards and rodents, also feed on dead snakes.

Distribution: Orissa: Throughout Similipal; also throughout the state. Elsewhere in India: Throughout (except extreme Northeast India). Elsewhere outside: Pakistan, Nepal, Bangladesh and Afghanistan.



Pratyush Mohapatra

Banded Krait

Length: 2000mm

Bungarus fasciatus (Schneider, 1801)

Rana sapa

Identification

- A fairly long snake; dorsal line elevated; head depressed, sub-ovate, distinct from the body; tail short, thick and blunt; eyes horizontally elliptical.
- Alternate band of black and yellow or white on the body and tail; the first black band on the nape continues towards the head; lips and backside of the head yellow and rest of the top of head black; belly banded with continuation to the bands on the body.

Habitat and ecology: Nocturnal; frequents the plains and open fields, often in the vicinity of water; frequents in lowland agricultural fields, lakes, ponds, dam etc., often associated near human habitations. Guarding of eggs has been observed; eggs measure 2.5 X 1.5 mm in size and the hatchlings are 320-340 mm in length. This species is mostly inoffensive in disposition, never attempts to bite. Diet: snakes of almost all species in its range, like *Ptyas*, *Lycodon*, *Oligodon*, *Xenochrophis*, *Naja*, *Enhydris* etc.; occasionally feeds on fishes, rats, mice, lizards, frogs etc.

Distribution: Orissa: Found in water logged areas in Similipal; also found in Cuttack, Dhenkanal, Khurdha, Puri, Nayagarh and Ganjam districts. Elsewhere in India: Eastern and Northeastern India: Assam, West Bengal, Bihar, Jharkhand, Andhra Pradesh and Tamil Nadu. Elsewhere outside: Nepal, Southeast Asia and Bangladesh.



Pratyush Mohapatra

Monocellate Cobra

Length: 2200mm

Naja kaouthia Lesson, 1831

Tampa sapa

Identification

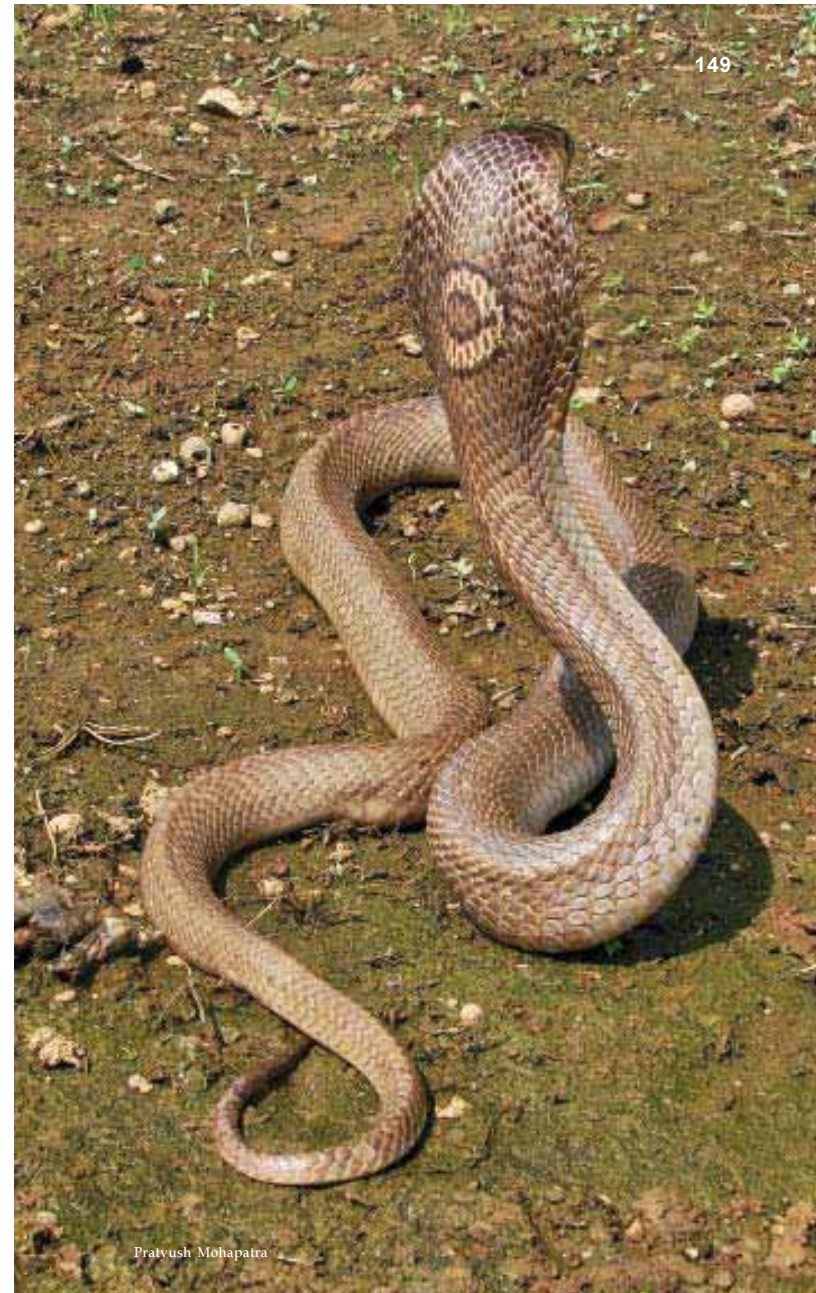
- A fairly large snake, head slightly distinct from the body, when threatened the fore body is raised and expanded to form a hood.
- Juveniles olivaceous, brownish or black above, with or without a yellow or orange-coloured "O" shaped or eye shaped mark on the hood. On the front side of the hood there are two black spots on the either sides and one or two broad black crossbars at the base.

Habitat and ecology: Diurnal; more or less aquatic in habit; mostly found near swamps, ponds, lowland agricultural fields, near rivers or nala and lives inside crab holes or rat holes adjacent to water. Very timid in disposition and shows temperament in slight disturbance. During winter many individuals were observed basking in agricultural fields. Diet: fishes (mostly Cat fish), frogs and rats.

Distribution: Orissa: Out skirts of Similipal in the water logged areas; also found in Balasore, Bhadrak, Jajpur, Cuttack, Puri, Khurdha and Nayagarh districts. Elsewhere in India: Northeast India, North India, West Bengal and Andaman & Nicobar Islands. Elsewhere outside: Nepal, Bangladesh, Myanmar, Thailand, Vietnam, Laos, Kampuchea and southwestern China.



Pratyush Mohapatra



Pratyush Mohapatra

Binocellate Cobra

Length: 2200mm

Naja naja (Linnaeus, 1758)

Naga sapa, Gokhara sapa

Identification

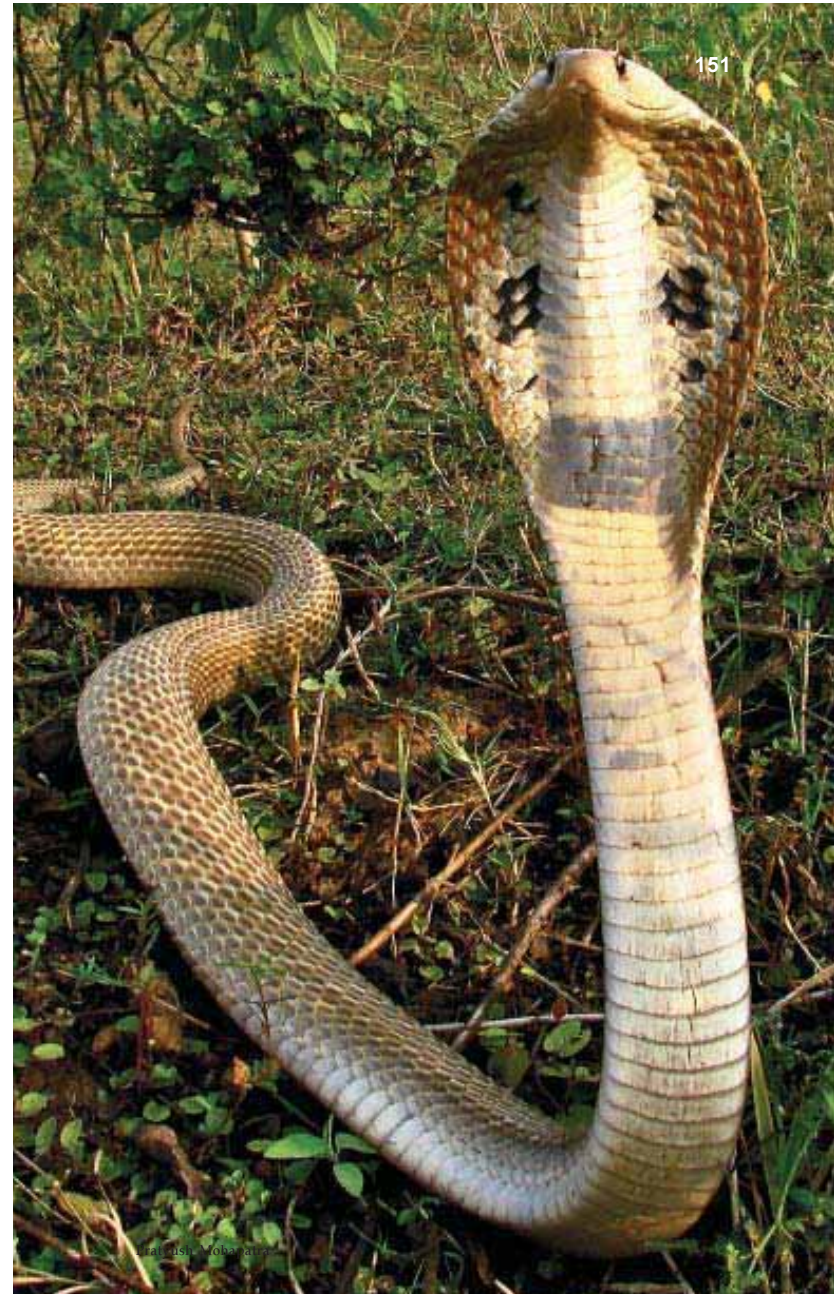
- Scales smooth, glossy; head broad, neck slightly distinct, when threatened the fore body is expanded to form hood.
- Body colour and markings very much variable. The dorsum brownish, yellowish, reddish brown, grey or buff with or without lighter speckled pattern; back side of the hood with a spectacle mark, ventral side of hood (front side) with two black spots followed by a dark band at the base.

Habitat and ecology: Mostly diurnal or crepuscular; found in low land scrub forest, agricultural fields, near human habitation and deciduous forests. Breeding during March; 8-12 eggs are laid during April-May; juveniles seen during August-September. Diet: rats, mice and toads. Sometimes the snake is also known to feed on larger prey like kittens.

Distribution: Orissa: Found throughout Similipal; also throughout the state. Elsewhere in India: Throughout peninsular India including Bihar, West Bengal and Assam. Elsewhere outside: Pakistan, Bangladesh, Nepal and Sri Lanka.



Pratyush Mohapatra



Pratyush Mohapatra

King Cobra

Length: 4500mm

Ophiophagus hannah (Cantor, 1836)

Ahiraja

Identification

- A large snake with fairly robust body; head large, with a pair of shields behind parietal; neck distinct, snout rounded; hood elongated and less dilatable than in case of cobra.
- Juveniles black above, with narrow, yellowish chevron-shaped transverse bars; on the back of the body the markings are expanded; head with four bars; whitish below, with narrow black or brown crossbars; on the hinder part of the body and tail there are dark stripes. Adults brown, grey or black in colour with faint chevron shaped marks throughout the body; belly mottled.

Habitat and ecology: Diurnal, frequents dense jungles, mangrove forests, in open country and also in deciduous forest; fond of water and climbs trees with ease. This is the only snake species where females build a nest by gathering leaf litter, 40-45 eggs are laid during May-June and the female guards the nest. Diet: snakes; both harmless and poisonous species are eaten, also cannibalistic in nature. Rarely they feed on monitor lizards and also accept mice in captivity.

Distribution: Orissa: In Similipal found throughout; also found in Bhitarkanika, Chandka-Dampara Wildlife Sanctuary, Barbera Reserve Forest, Satkosia Tiger Reserve, Nayagarh, Raygada forests. Elsewhere in India: Himalayan foot Hills, Southwestern, Eastern and Northeastern India; Assam, West Bengal (Sundarban), Bihar, Jharkhand, Western Ghats (Karnataka, Tamil Nadu and Maharashtra) and North Andaman Island. Elsewhere outside: Bangladesh, Bhutan, Nepal, east to Indo-Chinese and Indo-Malayan regions, up to Sulawesi (Indonesia).



M. V. Nair

Common Blind Snake

Length: 60mm

Ramphotyphlops braminus (Daudin, 1803)

Do mundia sapa; Telia sapa

Identification

- Body worm like with a colour and size resembling an earthworm; head not distinct from neck; snout rounded and projecting; mouth small; nostrils lateral; eyes small and located in the ocular shield or placed at the junction with the supraocular; tail very short and ends in a spine.
- Dorsum brown, chestnut brown, purplish brown, blackish brown or black. The snout, cloacal area and tip of the tail are sometimes lighter, cream-coloured or whitish. The venter is light brown or reddish brown.

Habitat and ecology: Mostly crepuscular in habit, sometimes found on the soil surface after heavy rainfall during day time; inhabits a great variety of habitats; coastal plain sands, savannah, rocky slopes with bushy vegetation, tropical and subtropical forests, plantations, cultivated lands and in areas near human settlements such as gardens. This is an excellent burrowing species. Food is raked into the mouth by "maxillary sweeping". When grasped, it can prick with its tail spine and smear the foul odorous secretion. 2-8 oval eggs are laid at a time in loose soil. Total length of hatchlings is 53-68mm. Diet: insectivorous, also feeds on insect larvae.

Distribution: Orissa: Throughout. Elsewhere in India: Throughout. Elsewhere outside: Widely distributed in most of the Asiatic countries; Oriental, Australian and African region and some parts of Central American countries.

Remark: This is the only species of snake, which has parthenogenic females.



Beaked Worm Snake

Length: 300mm

Grypotyphlops acutus (Dumeril, Bibron & Dumeril, 1844)
Teli Sapa

Identification

- Snout pointed and hooked, projecting strongly, with sharp horizontal edge; nostrils close to the rostral; rostral very large, covering most of the head above, extending posteriorly behind the level of the eyes.
- Brown above, paler below. In many individuals each scale of the back and sides have a pale yellow centre.

Habitat and ecology: Nocturnal in habit and found in dry deciduous forest under rock boulder or leaf litter. It becomes restless when caught and on ground it immediately tries to burrow itself. This species is one of the largest blind snake species. They are more common during rainy season and during winter they under go hibernation in side their burrow. Diet: termites and may be other small insects.

Distribution: Orissa: Found throughout Similipal, also found in Nayagarh, Balasore, Khurdha, Dhenkanal, Cuttack, Kalahandi and Ganjam districts. Elsewhere in India: Peninsular India: south of Ganges basin and south of Rajputana, west to Baroda and east to Calcutta.



Russell's Viper

Length: 2000mm

Daboia russellii (Shaw & Nodder, 1797)
Chandan Boda; Mahamandal

Identification

- Body cylindrical and stout with a relatively short and pointed tail, about 6.5-8 times of the total length; head flat, large, pear shaped and quite distinct from the neck; snout short and rounded. The nostrils large, comma shaped, positioned anteriorly at the head; eyes large with vertical pupils.
- Dorsum pale brown, olivaceous, yellowish brown or greyish brown, with three distinct longitudinal rows (one median, two on the lateral sides) of large, rounded or elliptical dark bordered spots; head with two large dark margins at the base; chin and throat white; belly uniformly whitish, yellowish-white, or spotted with black dots.

Habitat and ecology: Nocturnal; inhabits mostly in open, dry, grassy places, bushy and rocky areas, scrub jungles, margins of marshes, agricultural fields, plantations, gardens near human habitations. Lives in rat holes, degraded termite mounds, clump of grass, cavities under rocks and in any other hideouts; crepuscular and nocturnal in habit. Moves slowly, but can move much faster when disturbed. Threat reactions includes forming an "S" coil, arching the neck, hissing fiercely and very loudly, lunging and biting by thrusting the body to at least one third of its length. Juveniles are more aggressive than the adults. Ovoviviparous giving birth to 5-66 neonates. Diet: rodents and small mammals, sometime snakes.

Distribution: Orissa: In the dry zones of Similipal; also found throughout the state. Elsewhere in India: Throughout, except Northeast India. Elsewhere outside: Sri Lanka, Pakistan and Bangladesh.



Saw-scaled Viper

SVL: 800mm

Echis carinatus (Schneider, 1801)

Dhulia boda sapa

Identification

- Snout short, rounded when seen from above; tail short and pointed; scales on the top of the head small, elongate, imbricate and strongly keeled; scales on the body strongly keeled, the two outermost rows of dorsal scales are largest.
- Body colour pale brown or greyish above with a vertebral series of dark edged spots, which are connected on each side with a light inverted U or V- shaped mark enclosing a dark area; these white markings are more or less connected with one another forming one undulating light line along the side of the body; head with a cruciform whitish mark on the top; head whitish below, uniform or spotted with brown.

Habitat and ecology: Nocturnal in habit; inhabits semi-desert and desert tracts with sparse vegetation. It can move very rapidly and can strike rapidly when provoked. When excited it has a peculiar habit of rubbing the scales along the sides of the body and forming a figure of 8 with its head in the centre and while doing so it produces a typical hissing and rasping sound.

Distribution: Orissa: In Similipal found in the dry zones towards Udala; also reported from Betanati, Mayurbhanj; Kuldiha Wildlife Sanctuary, Balasore; Talcher, Angul; Titlagarh, Bolangir; Rourkela, Sundargarh; Chandikhol, Jajpur and Bhubaneswar, Chandaka Wildlife Sanctuary, Khurda. Elsewhere in India: Throughout mainland India except West Bengal, Assam and Northeast.



Pratyush Mohapatra



Pratyush Mohapatra



Pratyush Mohapatra

Bamboo Pit Viper

Length: 800mm

Trimeresurus gramineus (Shaw, 1802)

Fatka Sapa; Gendamundia Boila

Identification

- Body robust, tail short and prehensile; head quite distinct from the body, eye with vertical pupil; a pit in between preocular and second supralabial.
- Green or yellowish green above, uniform or with occasional small dark brown rhomboidal spots; interstitial skin black; belly whitish or greenish; upper lip whitish; a dark temporal streak present or absent.

Habitat and ecology: Nocturnal, sometimes seen during afternoon in cloudy weather; during day time it hides in tree holes, caves and in dense bushes. Generally found in scrub forest, in dry deciduous forest and mesic vegetation. Slow moving and timid but can bite with great force when provoked. When disturbed it makes the body in to a typical "S" folding, anchoring to the tree branch with the help of prehensile tail and throws the body with open mouth. Bite causes swelling and severe pain for more than 10 days; mostly bites the people while working in "Dongers" (hill countries). Diet: lizards, rats and occasionally birds.

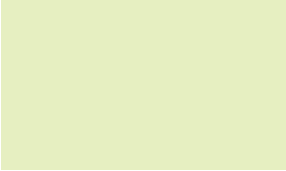
Distribution: Orissa: In Similipal found throughout; also found throughout Orissa. Elsewhere in India: Gujarat, Peninsular India, Western Ghats and Goa.



Pratyush Mohapatra



M.V. Nair



GLOSSARY

Amplexus: A form of pseudo copulation in which the male amphibian grasps the female with the front legs as a part of mating process.

Anaphylaxis: A potentially life-threatening allergic reaction to foreign molecules characterized by a dramatic drop in blood pressure. With snakebite, anaphylaxis can develop in two ways: in response to the venom or in response to the antivenom.

Arboreal: Living on trees.

Axilla: The area under the joint of arm with the shoulder.

BTCT test: Bleeding time and clotting time test is done by drawing a few ml of blood from the victim's body and keeping it undisturbed into a glass container to record the blood coagulation time. If the blood is still liquid and not able to coagulate in 20 minutes time then the patient has incoagulable blood, which is a sign of poisoning due to the bite of haemotoxic snakes.

Canthal ridge: *Canthus rostralis* is the angle of flat crown of head with the side of the head between the eye and snout.

Carapace: The dorsal side of the shell of the turtles.

Cranial: Relating to the skull.

Dermal appendage: The fleshy outgrow of rostrum.

Digits: Fingers and toes.

Dorsum: Back.

Femoral pores: Secreting structures in the centre of an enlarged femoral scale under the thigh.

Fossorial: Living underground.

Groin: The joint of hand limb with the thigh.

Herpetofauna: Amphibians and reptiles together.

Imbricate scales: Overlapping scales.

Labial: Lip.

Lamellae: The pads under the fingers and toes in geckos, which helps in adhering to the surface while climbing.

Loreal: The region of head between the eye and nostril. The Pit vipers have loreal pit.

Mental: The scale on the lower part of the snout on tip of the lower jaw; just below the rostral scale (see rostral).

Metatarsal tubercle: A shovel shaped structure on the foot that assists in burrowing habit.

Nuchal: Neck.

Oviparus: Animals laying eggs.

Ovo-viviparus: Animals in which the embryos develop inside the eggs within the mother's body until they are ready to hatch.

PA: Protected area.

Parotid gland: An external skin gland located at the back side of the head of toads.

Parthenogenesis: It is a form of asexual reproduction found in females, where growth and development of embryos occurs without the process of fertilization by a male.

Piscivorous: Carnivorous animal lives on eating fish.

Plastron: the underside or ventral side of the turtle shell.

Prehensile: The structure helps in holding twigs.

Rostral: The scale just on the tip of the snout.

SVL: Snout to vent length.

Syndactyle: "Syndactyly" is a condition in which two or more digits are fused together.

Temporal: The area behind eye; in snakes temporal scales are of two sets, the first temporal are the sets of scales touching the post ocular and the second temporal are the sets of scales touching the first temporal.

Torniquet: A compressing device used to stop blood flow to an extremity for a period of time. Use of torniquet was an old practice of snakebite first aid.

Tubercle: A wart like projection on the skin.

Tympanum: It is the external hearing structure in frogs, toads, lizards and turtles located just behind the eye.

Vent: The posterior opening for excretion, defecation and the sex organ in amphibians and reptiles.

Vertebral scales: The mid dorsal scales. There are specialized mid-dorsal scales of the snakes and turtles.

Vocal sac: It is a flexible membrane of skin possessed by the male frogs, which usually helps in amplification of the mating or advertisement call of frogs and toads.

WL(P)A: Wildlife (Protection) Act, 1972.

WLS: Wildlife Sanctuary.



SUGGESTED READING

Das, I. 1995. Turtles and Tortoises of India. WWF-India/ Oxford University Press, Bombay. X + 176 + (3) pp.

Das, I. 2002. A photographic guide to snakes and other reptiles of India. New Holland Publishers (UK) Ltd., pp 144.

Dutta, S. K. 1997. Amphibians of India and Sri Lanka (Checklist and Bibliography). Odessey Publishing House, Bhubaneswar. (4) + Xiii + 342 + xxii pp.

Frost, D. R. 2008. Amphibian species of the World: an online reference. Version 5.2 (15th July 2008). Electronic Database accessible at <http://research.amnh.org/herpetology/amphibia/index.php>. American Museum of Natural History, New York, USA.

Murthy, T.S.N. 1986. The snake book of India. Int. Book Distributors, Dehradun, pp 101.

Schleich, H. H. and W. Kastle (edited). 2002. Amphibians and Reptiles of Nepal. A. R. G. Gantner Verlag Kommanditgesellschaft, pp. 1201.

Sharma, R. C. 2003. Handbook- Indian snakes, Zoological Survey of India: pp. 1-292.

Smith, M. A. 1931. Fauna of British India including Ceylon and Burma (Reptiles and Amphibians) Vol. I. Loricata and Testudines. Published by Hollywood, Florida. Pp. 185.

Smith, M.A. 1933. The Fauna of British India, including Ceylon and Burma. Vol. I (Loricata, Testudines). Publ. By Taylor and Francis Ltd., London, pp 185.

Smith, M.A. 1935. The Fauna of British India, including Ceylon and Burma. Vol. II (Sauria). Publ. By Taylor and Francis Ltd., London, pp 440.

Smith, M.A. 1943. The Fauna of British India. Vol. III (Serpentes). Publ. By Taylor and Francis Ltd., London, pp 583.

Tiwari, S. K., Alfred, J. R. B. and Dutta, S. K. 2002. Vertebrate fauna of Chandaka-Dampara Wildlife Sanctuary Orissa, Conservation Area Series 14, Zoological Survey of India, Kolkata.

Uetz, P. et. al., The Reptile Database, <http://www.reptiledatabase.org>, accessed on October 2009.

Whitaker, R. and A. Captain. 2004. Snakes of India- the field guide. Draco publication, Chennai.

■ SPECIES INDEX ■

Amphibians

Common Asian toad	23
Common Indian tree frog	50
Dubois's tree frog	52
Dubson's burrowing frog	34
Dutta's cricket frog	26
Ferguson's toad	21
Fungoid frog	44
Grey balloon frog	42
Indian bull frog	30
Indian burrowing frog	35
Indian skipper frog	24
Jerdon's bull frog	28
Marbled Balloon frog	43
Marbled toad	22
Ornate narrow mouthed frog	38
Painted balloon frog	36
Pigmy tree frog	46
Short-headed burrowing frog	32
Similipal bush frog	48
Syhadra cricket frog	27
Variegated ramanella	40

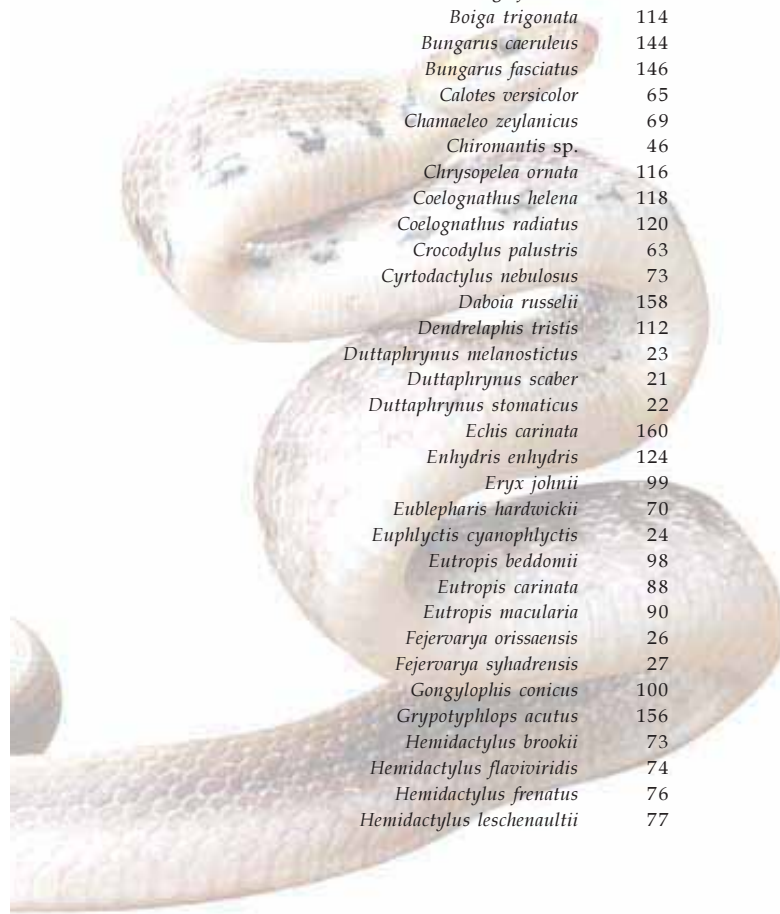
Reptiles

Bamboo pit viper	162
Banded krait	146
Banded racer	108
Bark gecko	73
Barred wolf snake	130
Beaked worm snake	156
Beddome's grass skink	86
Binocellate cobra	150
Buff-striped keelback	106
Cantor's Black headed snake	140
Checkered keelback water snake	142
Clouded ground gecko	84
Common blind snake	154
Common Indian bronzeback	122
Common Indian cat snake	114
Common Indian krait	144
Common Indian monitor	94
Common Indian rat snake	138
Common Indian skink	88
Common Indian trinket snake	118
Common kukri snake	134
Common sand boa	100
Common snake skink	84
Common vine snake	104
Common wolf snake	126
Copper-headed trinket snake	120
East Indian forest gecko	78
East Indian leopard gecko	70
Eastern black turtle	59

Eastern bronze skink	90
Elongate tortoise	60
Fanthroated lizard	68
Forsten' s cat snake	112
Indian chamaeleon	69
Indian flap-shell turtle	61
Indian garden lizard	65
Indian green keelback	132
Indian house gecko	74
Indian rock lizard	66
Indian rock python	102
Indian roofed turtle	55
John's sand boa	99
King cobra	152
Limbless skink	92
Mock viper	136
Monocellate cobra	148
Mugger crocodile	63
Olive keelback water snake	110
Ornate flying snake	116
Peninsular tent turtle	56
Russell's viper	158
Saw-scaled viper	160
Smooth house gecko	76
Smooth water snake	124
Snake-eyed lacerta	80
Spotted Indian house gecko	73
Tricarinate hill turtle	58
Twin spotted wolf snake	128
White spotted supple skink	82
Yellow monitor lizard	96

INDEX: SCIENTIFIC NAME

<i>Ahaetulla nasuta</i>	104
<i>Amphiesma stolatum</i>	106
<i>Argyrogena fasciolata</i>	108
<i>Atretium schistosum</i>	110
<i>Batagur tecta</i>	55
<i>Batagur tentoria</i>	56
<i>Boiga forsteni</i>	112
<i>Boiga trigonata</i>	114
<i>Bungarus caeruleus</i>	144
<i>Bungarus fasciatus</i>	146
<i>Calotes versicolor</i>	65
<i>Chamaeleo zeylanicus</i>	69
<i>Chiromantis</i> sp.	46
<i>Chrysopelea ornata</i>	116
<i>Coelognathus helena</i>	118
<i>Coelognathus radiatus</i>	120
<i>Crocodylus palustris</i>	63
<i>Cyrtodactylus nebulosus</i>	73
<i>Daboia russelii</i>	158
<i>Dendrelaphis tristis</i>	112
<i>Duttaphrynus melanostictus</i>	23
<i>Duttaphrynus scaber</i>	21
<i>Duttaphrynus stomaticus</i>	22
<i>Echis carinata</i>	160
<i>Enhydris enhydris</i>	124
<i>Eryx johnii</i>	99
<i>Eublepharis hardwickii</i>	70
<i>Euphlyctis cyanophlyctis</i>	24
<i>Eutropis beddomii</i>	98
<i>Eutropis carinata</i>	88
<i>Eutropis macularia</i>	90
<i>Fejervarya orissaensis</i>	26
<i>Fejervarya syhadrensis</i>	27
<i>Gongylophis conicus</i>	100
<i>Grypotyphlops acutus</i>	156
<i>Hemidactylus brookii</i>	73
<i>Hemidactylus flaviviridis</i>	74
<i>Hemidactylus frenatus</i>	76
<i>Hemidactylus leschenaultii</i>	77



<i>Hemidactylus</i> sp.	78
<i>Hoplobatrachus crassus</i>	28
<i>Hoplobatrachus tigerinus</i>	30
<i>Hylarana malabarica</i>	44
<i>Indotestudo elongata</i>	60
<i>Kaloula taprobanica</i>	36
<i>Lissemys punctata</i>	61
<i>Lycodon aulicus</i>	126
<i>Lycodon jara</i>	128
<i>Lycodon striatus</i>	130
<i>Lygosoma punctata</i>	84
<i>Macropisthodon plumbicolor</i>	132
<i>Melanochelys tricarinata</i>	58
<i>Melanochelys trijuga</i>	59
<i>Microhyla ornata</i>	38
<i>Naja kaouthia</i>	148
<i>Naja naja</i>	150
<i>Oligodon arnensis</i>	134
<i>Ophiophagus hannah</i>	152
<i>Ophisops jerdoni</i>	80
<i>Philautus similipalensis</i>	48
<i>Polypedates maculatus</i>	50
<i>Polypedates teraiensis</i>	52
<i>Psammodynastes pulverulentus</i>	136
<i>Psammophilus blanfordianus</i>	66
<i>Ptyas mucosus</i>	138
<i>Python molurus molurus</i>	102
<i>Ramanella variegata</i>	40
<i>Ramphotylops braminus</i>	154
<i>Riopa albopunctata</i>	82
<i>Sepsophis punctatus</i>	92
<i>Sibynophis sagittarius</i>	140
<i>Sitana ponticeriana</i>	68
<i>Sphaerothera breviceps</i>	32
<i>Sphaerothera dobsonii</i>	34
<i>Sphaerothera rolandae</i>	35
<i>Trimerisurus gramineus</i>	162
<i>Uperodon globulosus</i>	42
<i>Uperodon systoma</i>	43
<i>Varanus bengalensis</i>	94
<i>Varanus flavescens</i>	96
<i>Xenochrophis piscator</i>	142

ABOUT THE AUTHORS

Prof. Sushil K Dutta was born in 1952 and got his M. Sc. from Utkal University in 1975. He did his Ph. D. in Developmental Biology from the same university. He got a second Ph.D. on Amphibian Taxonomy from University of Kansas, USA. During 2004 he received the D.Sc degree from Utkal University. In 2006 he became the fellow of Indian Science Academy. He has published over 200 research papers and 6 books on amphibian and reptile biology and taxonomy. He is an authority of amphibians of Indian Subcontinent and is the Director of the SERC School in Herpetology (DST). Presently he is Professor and Head of the P. G. Department of Zoology at North Orissa University.



Manoj V. Nair is an alumnus of the Wildlife Institute of India and an Indian Forest Service officer of Assam cadre with a deep interest in conservation education and popularizing natural history. He has been an avid naturalist since his childhood and believes that an idealistic and passionate younger generation has a major role to play in conserving our vanishing forests and wildlife. His other interest includes creative writing (especially poetry), Indian classical music, trekking and photography. He is currently working as Deputy Director of Similipal Tiger Reserve.



Dr Pratyush P. Mohapatra is an inborn naturalist having special interest on reptiles and arachnids. He has completed his Masters from Utkal University and then initiated the snake rescue and awareness programmes in the state. He has worked on Systematics and Biogeography of snakes of Orissa as his Ph. D. topic under the guidance of Prof. S. K. Dutta from North Orissa University. He is currently working in WWF-India on Tiger conservation programme in Similipal and Satkosia Tiger reserves in Orissa. He is continuing his research interest on the reptiles of India.



Ajay Kumar Mahapatra received M.Sc from Utkal University and joined Indian Forest Service in 1984. He completed Ph.D at University of Aberdeen, UK as a Commonwealth Scholar in 1997 and researched at Cambridge University, UK on natural resource management. His research interest includes bio-resources documentation and analysis. He has authored 23 research papers, 2 books, and was the recipient of ICFRE research excellence award in 1999 for outstanding research in forest extension. In 2007, he received India Endeavour Executive Award from Australian Government. Currently, he works as Director of Regional Plant Resource Center at Bhubaneswar in India.



